The RUBBER AGE

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LATE NEWS of the Industry

United States Rubber Consumption Totaled 28,557 Tons During January

CONSUMPTION of crude rubber by manufacturers in the United States for the month of January is estimated to be 28,557 long tons and represents an increase of 32.9 per cent over the December consumption of 21,493 long tons, according to statistics compiled by the Rubber Manufacturers' Association. It was, however, well below the January, 1930, consumption of 35,872 long tons and marked the smallest total for that month since January, 1922.

Imports of crude rubber for January amounted to 37,098 long tons as compared with 34,895 long tons for December, according to the association's own estimates.

The association estimates total domestic stocks of crude rubber on hand and in transit overland on January 31 at 209,485 long tons, an increase of 3.6 per cent over December, and 59 per cent over January, 1930.

Crude rubber afloat for United States ports on January 31 is estimated at 56,188 long tons as against 56,035 long tons on December 31 and 61,863 long tons on January 31 a year ago.

The total of 265,673 long tons on hand or afloat to this country represents a new high record for such visible stocks in the history of the domestic industry.

Tire Output Dropped 26.1% in 1930 With Year's Total 51,220,822 Units

PRODUCTION of automobile tires of all types in the United States abruptly dropped last year to the lowest figure recorded since 1923. According to the statistics compiled by the Rubber Manufacturers Association, actual output of all pneumatic, solid and cushion tires during 1930 totaled only 51,220,822 units, a decline of 26.1 per cent from the 1929 figure of 69,237,520 units and far below the record production in 1928 of 78,622,448 units.

During 1930, tire production in the United States was divided into 42,348,142 balloon casings, 8,629,830 high pressure casings and 255,350 solid and cushion tires. The output in 1929 had consisted of 51,410,721 balloon casings, 17,315,119 high pressure casings and 511,680 solid and cushion tires. The drop in balloon casing output was not nearly so severe as that in the case of the other types.

The decline in the production of inner tubes last year was in line with the falling off in casing output. During 1930, a total of only 52,420,010 tubes were turned out, as compared with 68,828,607 in the year previous and with the 1928 peak figure of 80,179,841 tubes.

The tire industry is estimated to have consumed a total of 595,944,634 pounds of crude rubber and 198,515,577 pounds of cotton fabric in the manufacture of all types of casings, inner tubes and solid and cushion tires during the year of 1930.

Despite a drop in general rubber factory operations during December, tire production during that month increased slightly over November. Output of pneumatic casings in that month is placed at 2,814,086, an increase of 6 per cent over the November figure of 2,653,861. Production in December, 1929, amounted to 3,057,271 casings.

Shipments of pneumatic casings for December amounted to 3,361,200, an increase of 18.6 per cent over November and 3.8 per cent over December, 1929. Shipments for the entire year totaled 53,641,385 casings, exceeding production by 5.3 per cent, whereas during 1929 the excess was slightly less than 1 per cent.

The association reports pneumatic casings on hand December 31 as 9,003,438, representing a decline of 6.2 per cent under November 30 and 23.9 per cent below December 31, 1929. Shipments of inner tubes and of solid and cushion tires also exceeded production during December, bringing stocks down to lower levels.

Mohawk Rubber Company Report Shows Net Loss of $668,698 in Year of 1930

THE Mohawk Rubber Company of Ohio and the Mohawk Rubber Company of New York, Inc., report for the year ended December 31, 1930, a net loss of $668,698 after interest, depreciation and after writing off $248,155 inventory adjustment. This compares with a net profit in 1929 of $216,327, equivalent after allowing for dividend requirements on 7 per cent preferred stock to 56 cents a share on 115,486 shares of no-par common stock.

The loss before inventory write-downs was $420,543, according to Charles Borland, president, and the operating loss was $188,713. Approximately $113,000 of the operating loss was attributed by Mr. Borland to the decline in the

price of raw materials throughout the year. The company, he said, shows a ratio of current assets to current liabilities of better than three to one after making all adjustments.

Last June the company discontinued paying dividends on the 21,642 shares of 7 per cent preferred stock outstanding. At the same time it was voted to increase the authorized capital stock of the company from 125,000 to 150,000 shares. Of the increased stock thus made available, 15,000 shares were to be held in reserve for subscription by employes of the plant, while the balance was to be sold to the company's new officers and directors.

The executive personnel of the company was largely reorganized last year with Mr. Borland, who was elected a director last February, becoming president in June, succeeding S. S. Miller, who was named chairman of the board of directors. J. F. Jones, Jr., vice-president in charge of sales and a director, resigned and was replaced by George W. Spahr, formerly sales manager of the Dayton Rubber Manufacturing Company. The place of Mr. Jones on the board of directors was filled by the election of Dr. Robert H. Bishop, Jr., Cleveland physician, who was until last April on the board of the Goodyear Tire & Rubber Company. H. H. McCloskey, secretary of the company, also resigned, his work being taken over by Ray E. Bloch, vice-president in charge of finance.

The common stock of the company has declined from a 1929 high at 66 and a 1930 high at 16⅝ to a recent low of 3.

Goodyear Earned $9,912,233 for 1930 After Taking $5,000,000 From Reserve

FOLLOWING a meeting of its board of directors on February 9, the Goodyear Tire & Rubber Company issued to stockholders its annual reports, revealing that net profits for the year ended December 31, 1930, totaled $9,912,233 after interest, depreciation, federal taxes, subsidiary preferred dividends, etc., and after charging $5,000,000 inventory write-down to reserves previously set up for such contingencies. The net earnings figure reported is equal to $3.16 a share on the 1,416,633 shares of no-par common stock outstanding at the end of the year.

These results compare with net earnings in 1929 of $19,864,374, equal to $10.23 a share on the 1,398,139½ common shares then outstanding. After making a reserve of $1,250,000 for contingencies, however, the net balance in that year was reduced to $18,614,374, or $9.34 per share of common stock.

Net sales during 1930 were $204,063,229, a reduction of 20 per cent from the record sales total in 1929 of $256,227,067. After deducting preferred and common dividends, there was a deficit for 1930 of $2,527,658, comparing with a surplus of $7,791,003 at the close of 1929. The profit and loss surplus amounted to $23,795,957 on December 31, against $26,638,613 at the end of the previous year.

During the past year, Goodyear spent $14,339,974 on additions to properties, which includes capital requirements for a new factory just opened near Buenos Aires, Argentina, further development of rubber plantations in Sumatra and further expenditures on existing plants in Akron, Los Angeles and Gadsden in the United States and in Canada, England and Australia.

"The present business depression has proved to be one of the most severe in many years," said P. W. Litchfield, president and chairman, in his report to stockholders, "and has had an adverse effect on both the volume of our sales and realized profits, although it is gratifying to report that the reduction in our sales has been less than for the industry as a whole. In common with most commodities during this period our principal raw materials, rubber and cotton, suffered market declines over the whole year, resulting in one of the heaviest write-downs we have experienced, but the resultant low adjusted values give substantial assurance that further large adjustments are improbable and, consequently, the $5,000,000 special reserve previously provided for this contingency has been utilized. In view of the drastic decline in crude rubber from 16 cents a pound at the beginning of the year to 8½ cents at the end of the year and in cotton from 17¼ cents at the beginning of the year to 10 cents at the end of the year, the directors have considered it proper to appropriate this amount.

"While the year 1931 is starting with relatively low production schedules, we anticipate a slow but improving volume as the year progresses and your company, with its strong financial position and the increasing popularity of its products, confidently anticipates a restoration of normal earning power as general business conditions improve."

During 1930 the first preferred stock of the company was reduced by 11,608 shares and the first mortgage and collateral trust bonds were reduced $1,442,500 through the operation of the respective sinking funds.

The consolidated income account for the year ended December 31, 1930, compares with the two previous years as follows:

	1930	1929	1928
Net sales	$204,063,229	$256,227,067	$250,769,208
Exp. fed. tax, depr., etc.	‡190,910,570	233,914,052	*233,000,969
Balance	$13,152,659	$22,313,015	$17,768,239
Other income	1,646,059	2,690,140	1,799,147
Total income	$14,798,718	$25,003,155	$19,567,386
Int. and other charges	3,497,638	3,688,969	4,417,142
Pfd. divs. of subs., etc.	1,388,848	1,449,812	1,822,401
Balance	$9,912,232	$19,864,374	$13,327,843
Res. for contingency	.....	1,250,000	.....
Net profit	$9,912,232	$18,614,374	$13,327,843
Pref. divs.	5,438,239	5,556,172	5,596,071
Com. divs.	7,001,651	5,267,199	.....
Deficit	$2,527,658	†$7,791,003	†$7,731,772
P. & L. surplus	23,795,957	26,638,613	19,344,736

*After charging $2,500,000 cost of rubber to reserves.
†Surplus.
‡After charging $5,000,000 cost of rubber to reserves.

India Tire & Rubber Company Shows Operating Profit of $18,887 for 1930

REPORTS made at the annual meeting on February 9 show that the India Tire & Rubber Company, Mogadore, O., had an operating profit in the year ended December 31, 1930, of $18,887. During the previous year, the company showed operating earnings before charges of $300,078 and net profit of $80,967. In 1928 there was a net loss of approximately $248,000.

Net sales of $3,650,741 were reported by W. G. Klauss, president, as compared with net sales during 1929 of $5,024,378. In respect to replacement tire units, however, Mr. Klauss pointed out that India sales showed a decrease of only 5½ per cent as against a drop of 17 per cent for the industry as a whole.

Stockholders were told that all bank indebtedness of the company was wiped out during 1930. "India is now in a very strong financial condition," Mr. Klauss declared. "Total current assets are $1,671,333 against current liabilities of $308,323, or a ratio of nearly six to one, with a working capital of $1,363,010. The company has made a sweeping write-down of materials in inventory of finished goods, raw materials and commitments all to the low price at December 31, 1930." Replacing its former bank indebt-

edness, the company now has outstanding $800,000 in 6½ per cent serial notes.

Mr. Klauss said that during 1930 reduction in costs had been made to such an extent that it is now possible to produce a tire for 30 per cent less labor expense than a year ago, due largely to the introduction of individual watch case vulcanizers which operate more efficiently than other types. A novel workers' bonus plan was recently installed in the India factory by which the employes earned a premium, but by which the decrease in overhead expense was far in excess of the bonuses earned. India made no reduction in sales force in 1930, either in number or in salaries.

Philip R. Mather, of Pickands, Mather & Company, was elected a director of the company to represent substantial Cleveland interests. Mr. Mather is a son of Samuel Mather and is the first of the Mathers to become actively identified in the rubber industry. He succeeds Paul C. Searles as director. Other directors were reelected, including George W. Merz, J. M. Alderfer, A. T. Kingsbury, H. Lloyd Williams, T. H. Borton and W. G. Klauss.

Lester V. Baker, son of Ellery A. Baker, president of the New York industrial engineering concern bearing his name, was elected treasurer, succeeding W. F. Vieh. Other officers were reelected, including J. M. Alderfer, chairman of the board; W. G. Klauss, president; George W. Merz, vice-president; Sterling Alderfer, secretary; and John T. Fisher, comptroller and assistant treasurer.

Baldwin Rubber Company Profit Holds Steady at $150,855 During Past Year

NET profit of the Baldwin Rubber Company, Pontiac, Mich., during the year ended December 31, 1930, was only slightly less than for the preceding year at $150,855, equal to 75 cents a share on the class B stock. For 1929 the company's earnings were $152,216, equivalent to 77 cents a share on the class B stock. The company manufactures rubber automobile flooring, automobile running board mats and mechanical rubber goods.

Capitalization of the Baldwin company consists of 50,000 shares of class A convertible stock, paying $1.50 annually, of which 49,980 shares are outstanding, and 200,000 shares of class B stock, of which 100,040 shares are outstanding. The company has 99,960 shares of class B stock reserved for conversion of the class A.

The factory at Pontiac was placed on two eight-hour shifts this month, materially increasing its output. S. C. Clark, president, said that the plant had been operating on a single eight-hour shift per day, but it has been found necessary to increase production because of a recent quickening in orders from automobile factories.

Akron Group of Rubber Division, A. C. S., Elects P. P. Crisp as Chairman for 1931

MEMBERS of the Akron Group of the Rubber Division, American Chemical Society, held their regular mid-winter meeting at the Firestone Clubhouse on the evening of February 9. The meeting, which was held without the usual dinner preceding it, was attended by about 125 members, and officers were elected for the current year. A social hour followed the meeting, during which coffee, doughnuts and smokes were served.

P. P. Crisp, manager of the preparations department of Firestone Tire & Rubber Company, was elected chairman, succeeding C. W. Sanderson, of Goodyear Tire & Rubber Company. Henry Conroy, of General Tire & Rubber Company, was named vice-chairman, taking the place held by W. L. Shively, of Goodyear Tire & Rubber Company, last year, and Lester W. Brock, of Godfrey L. Cabot, Inc., was re-elected secretary and treasurer.

In the first paper of the evening, Charles S. Powell, of Firestone, discussed "The Recovery of Rubber and Cotton from Uncured Tire Ply Scrap by an Extraction Process." Mr. Powell mentioned the several processes in use, including washing, acid and solvent methods, and emphasized the extractor method as employed at the Firestone factory, by which the scrap is tumbled in an immersed revolving screen, the solvent being drawn off several times and fresh solvent added. The cement and cotton fibre are used for various factory processes and production.

The second paper was presented by H. A. Brittain, of the Goodyear Tire & Rubber Company, the subject being "Drop Center Tires and Rims." Mr. Brittain illustrated his talk with slides to show the difference between American drop center rims and those now in use in foreign countries. He also pointed out some of the advantages, as well as some of the disadvantages, of this type rim and indicated some of the modifications in tire and tube manufacture found necessary in order to use this rim successfully on American cars.

Mr. Brittain stated that about 15 cars this year are using the drop center or semi-drop center rim and predicted that all cars in the popular 17- and 18-inch tire sizes will change over to this type in the not very distant future. Rubber companies, he concluded, would, therefore, do well to study the problems of this type of tire equipment and be ready to give service when the demand becomes even greater.

C. M. Carson, also of the Goodyear Tire & Rubber Company, gave the final paper of the session on the subject of "Changes in Crude Rubber During Storage." Mr. Carson presented the complete findings of his company after a vast amount of work done on the effects that different temperatures of the storage rooms have on crude rubber over varying periods of time. Altogether, he said, some 40,000 pounds of rubber was milled to different plasticities and packed and stored under different conditions. The condition of the rubber was checked from time to time over a period of about nine months and the changes were shown on slides presented by the speaker. The entire series of experiments, he concluded, had made possible the arrival at a very accurate gauge for a wide range of temperatures and periods of time.

Members of the Akron Rubber Group have been invited by the Akron-Canton Section of the American Society of Mechanical Engineers to attend the meeting of that body on February 27 at the Central High School auditorium at Akron. At this session, Dr. George K. Burgess, director of the Bureau of Standards, will talk on the work of his organization. Roy V. Wright, president of the American Society of Mechanical Engineers in New York, will also make a brief talk.

Boston Rubber Group Meets March 5

The first 1931 meeting of the Boston Group of the Rubber Division, American Chemical Society, will be held on March 5 at 6:30 p. m. at the University Club in that city. After the usual dinner and a brief business meeting, three speakers will conclude the program. Dr. Karl T. Compton, president of the Massachusetts Institute of Technology, will speak on "The Relation of Science to Industry," and Dr. Harry L. Fisher, of the General Laboratories of the United States Rubber Company, will talk on "What Is New in Rubber Chemistry." The concluding speaker will be A. A. Glidden, of the Hood Rubber Company, who will talk on topics of general interest. Those desiring to attend the meeting should get in touch with T. M. Knowland, Boston Woven Hose and Rubber Company, secretary of the group.

(Other news of the industry will be found on Pages 519-525)

Rubber Companies to Cooperate with National Tire Dealers Association

TIRE manufacturers and the National Tire Dealers' Association have adjusted their differences arising from the manufacturers entering the retail sales field, and have agreed on a plan of cooperation to build up membership in the association.

Announcement of the cooperative scheme was made February 17 in Chicago by Norval P. Trimborn, recently chosen secretary-manager of the association. Offices of the association were moved recently from Akron to Chicago.

Representatives of the factory retail outlets which several of the large tire manufacturers have established on a nation wide plan, are to be allowed membership in the dealers' association and aid in the strengthening of the dealers' association branches throughout the country.

The plan under which the manufacturers will aid the association was evolved in a series of meetings, held in Akron, New York and Detroit. The Akron session was held at Portage County club late last summer. Officials of the Rubber Manufacturers Association represented the tire manufacturers at the New York and Detroit meetings, and at the Akron gathering the sales department heads of all the Akron factories attended.

"Intensive development of membership in the National Tire Dealers' Association will be fostered by the manufacturers through their association and through their sales departments," the announcement from Trimborn said. This was confirmed by sales executives of Akron factories.

A six-point policy has been drawn up through which this cooperation will be given. Chief among the policy points is the aid to be given the dealer's association by the manufacturers in building up strong tire dealer organizations in the larger cities of the country.

New Guayule Factory Opened at Salinas

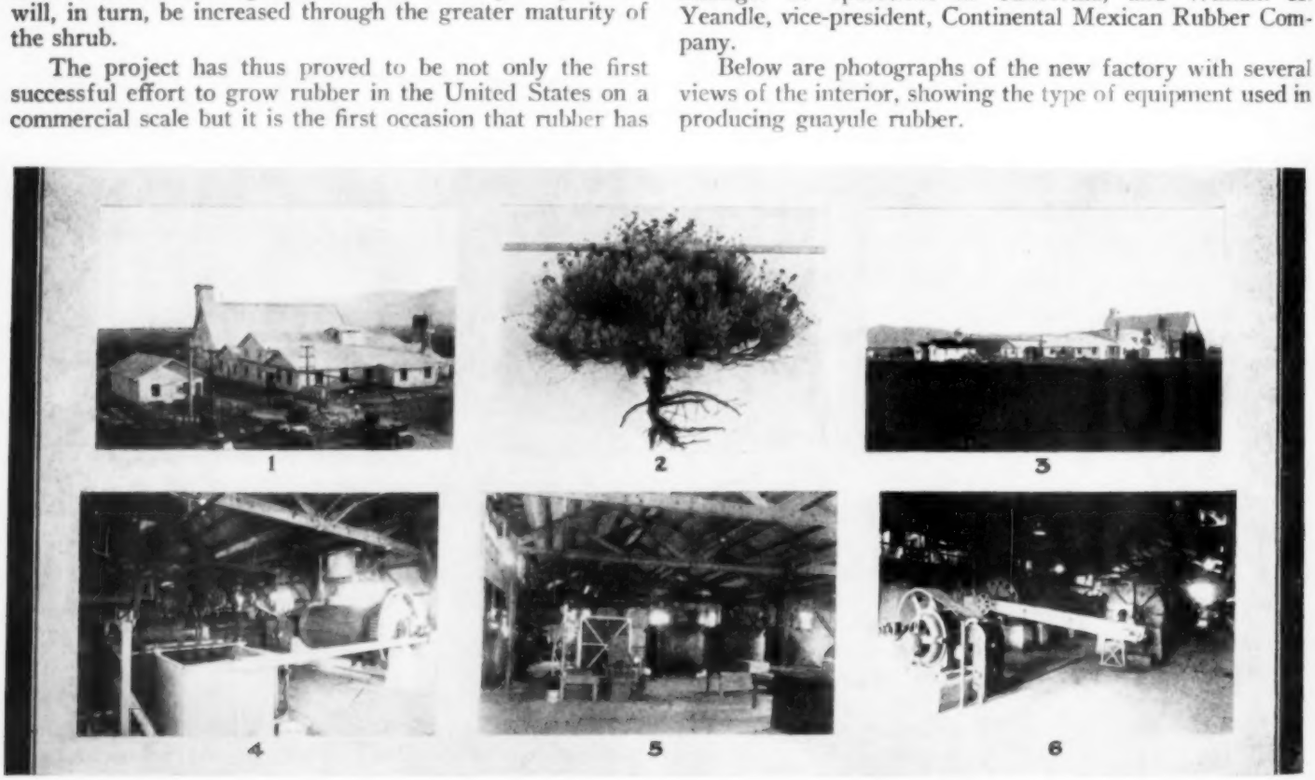
A NEW and completely equipped factory for the production of rubber from the Guayule shrub was inaugurated February 6, by the American Rubber Producers, Inc., a subsidiary of the Intercontinental Rubber Company. The plant is located near Salinas, California, and has a capacity of 15,000 pounds of dry rubber per day. The company has been cultivating guayule in the vicinity of Salinas for several years and at the present time has approximately 6,500 acres of planted shrub. This is the first time however that cultivated guayule has been harvested and milled on any commercial scale. In view of the prevailing low prices for rubber the plan of the company is to restrict the harvesting of their mature acreage until a more advantageous time, when the yield per acre will, in turn, be increased through the greater maturity of the shrub.

The project has thus proved to be not only the first successful effort to grow rubber in the United States on a commercial scale but it is the first occasion that rubber has been produced from American grown shrubs in commercial quantities.

The inauguration of this plant marks the culmination of 18 years of experimentation in the domestic cultivation of the guayule shrub and the development of processes and machinery for the extraction of its rubber content on a scale of sufficient size as to make the project commercially successful.

The men largely responsible for the success of the project are George H. Carnahan, president of Intercontinental Rubber Company and president of American Rubber Producers, Inc.; Dr. William B. McCallum, chief botanist; Dr. David Spence, technical director; J. Miller Williams, manager of operations in California, and William H. Yeandle, vice-president, Continental Mexican Rubber Company.

Below are photographs of the new factory with several views of the interior, showing the type of equipment used in producing guayule rubber.



(1) Front View of the New Guayule Factory, near Salinas, Cal. (2) Close-up View of a Mature Guayule Shrub [Ruler shown is 36 inches long]. (3) Rear View of the Factory. (4) View of the Refining Department. (5) Section of the Drying Department. (6) View of the Milling Department

COLOR *and* DESIGN *on* RUBBERIZED RAINWEAR

Naturalistic Colors and Designs Find Popular Favor—Methods of Working Out a Design—The Trends in Geometric and Futuristic Motifs

By GEORGE RICE

THE psychology or modernity in colors and designs on all kinds of apparel, drapery, household furnishings and automobiles is reflected in rubberized outer garments to a greater extent than ever before. Women are wearing the beautifully colored and designed raincapes in preference to the plain garments of this type. In a recent conversation with a large manufacturer of cotton, linen, rayon and all-silk taffeta raincoats for women and girls we were told that as much attention is being given to the decorative features of these coats as to their lines and dimensions. Apparently the vogue of the appropriately decorated raincape has come to stay.

The wearers of the rainwear garments want style and beauty in the modernistic patterns and hues that prevail today. The distributors of rainwear know this, because of the unsaleability of the old style sombre looking capes and coats as compared with the quicker turnover of this newer kind of apparel when it is decorated so as to play up the lights and the shadows of a misty day in a pleasing and attractive manner.

All of which means compliance with the laws of color arrangement and the rules of designing. Most of the decorative effects can be placed under the headings of the naturalistic, the conventional, the geometric and the indefinite, the latter including the general group belonging to no particular order.

Going to nature for the height of artistry in both the colors and designs in modern rubberized apparel involves something more than getting ideas from the flowers in an hot house or a garden, and even more than picking up ideas of shapes and tints from old patterns or what one may find in books about color schemes and design analysis. We frequently have to go outside the laboratory and back-to-nature to get the type of inspiration which seems to be essential when working out a decorative effect for raincapes. This means a hunting trip through the marshes, the forests and the hills, where flowers, buds, leaves, stems, barks, grass and moss greet the practiced eye in endless array so that one wonders why he had not tramped the highways and the lowways before to get freshness for his patterns. Or instead of seeking out vegetation as a source of suggestiveness, the rocky spaces can be gone over, where minerals of varied colors can be found and their variously blended shades imitated in a proposed pattern.

A friend of mine who has made a success in color effects in rainwear said that he recently obtained a fine set of color tones from some sand dunes which he examined. These color tones included greens, yellows, browns, and numerous others, all of which were useful in the making of the color tones for his designs on capes.

Method of Working Out a Design

Whether the naturalistic design is taken from flowers, animal life, leaves of trees, or something found in the hills or meadows, a certain amount of technique is necessary in order to put the object or objects into shape for a cape or rain coat pattern. Plants do not always retain their natural form, because the wind shifts them about, and the changing colors brought on by the varying seasonal and weather conditions, change their shapes and settings and tints.

Consequently the design has to proceed something after the plan shown in the drawings in which Figure 1 represents the squared drafting paper on which the framework of the proposed floral setting has been begun. These frame lines are arranged with a view of obtaining a proper balance in the pattern when the buds, the petals and the leaves are filled in. Other motifs may be added, but as a rule the artist restricts himself to floral parts in a pattern

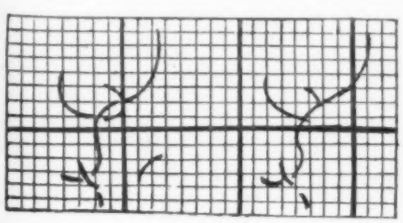


Figure 1

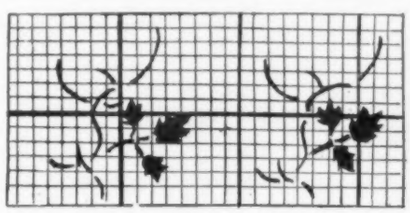


Figure 2

Figure 3

Figs. (1) The Frame Work of a Design Can Be Outlined on Drafting Paper. (2) Then Some of the Motif Can Be Added. (3) With the Addition of the Final Motifs the Design Will Be Completed

Figure 4
Futuristic and Geometric Designs Combined Into a Single Plot

which is to contain the contrasting colors sought for in nature's flower garden. In fact, there are many of the fair sex who prefer that this class of rainwear decoration be free of the straight lines, angles, and general geometrical figures that might be appropriate in other kinds of wearing apparel. There are some types of designs in which it is possible to get results with a flower combination in which the various elements have been haphazardly put in.

In most cases, no amount of future filling in with motifs will correct a crudely set-up base structure. For this reason the use of the lined drafting paper is apparent, for then the first frame lines can be accurately applied at equal distances and in an orderly fashion. The next step consists in putting in the first of the motifs, which in this case consists of the leaves as shown in Figure 2, which in turn is followed with other parts composing the completed design as shown in Figure 3. In this way the most complicated forms of rubberized wearing apparel can be ornamented so far as the placing of the frame lines and the motifs is concerned. Some blocking in with additional naturalistic effects may be necessary, although it is plain that the existing demand for rainwear is limited chiefly to a floral setting without other embellishments. Possibly this is due to the fact that it is appropriate to have objects from the garden on a garment which is rained upon.

The usual colors employed are, of course, those prescribed by nature, and the artisan therefore does not have to resort to his training in color selection, for if he does, and alters the hues of the flowers from their natural shades, to get what seems to be a better effect, he is very likely to produce an effect which will not please the critical vision of the customers, although the colors may harmonize correctly and look well.

Of course it is important to avoid color clashes. One design which was commercially used was produced to represent some wild manzanita, with its sage leaves, red berries and terra cotta branches produced on a crimson ground. The colors of the plant were quite discordant with the color of the ground although the pattern proved to be a good seller, which fact illustrates that even the experts cannot always tell just what the public is going to want.

Trend in Geometrical Designs

The geometrical division of designs for colorful raincoats and raincapes is holding a more important position in this class of wearing apparel than formerly, so that the stylists are giving more attention to these designs. In fact the entire field of designs, colors and weaves for textiles is open for the raincoat manufacturers with the result that all kinds of artistically arranged motifs are to be seen in various hues and tints on all-silk, artificial silk, alpaca, mohair, and even the cheap cotton raingoods. The geometrical class of these patterns includes the rectangles, triangles, ovals, squares, elliptical and circular forms which the designers of the present time lay out in harmonious arrangement and appropriate colors. For a long time the staid geometrical formations were not used much outside of decorations for rugs, wall paper and certain kinds of architectural construction work. But for purposes of novelty and in line with modernistic trends the designers of decorative work for rainwear are now extending their ornamentation beyond plant, bird and animal life into the geometrical field. This takes them more and more out of the conventional groups of designs, in which, often a certain shape is chosen from some object and this shape simply repeated over and over again, but varied in color.

In the event that geometric design might prove to be too set and too common, it is often combined with a futurist or some other design as plotted in Figure 4.

A better expression is given such a design when the angular or other forms of which it is composed are studded with motifs selected from birds or flowers. Bird plumage always looks well in raincoat decorative art and often is used.

Bizarre Effects

Curious enough, there are many wearers of raincoats who prefer patterns of a bizarre order to those of a milder character. Some of the most remarkable interpretations of sample designs for rainwear and all kinds of wearing apparel, drapery, upholstery and wall cloth were

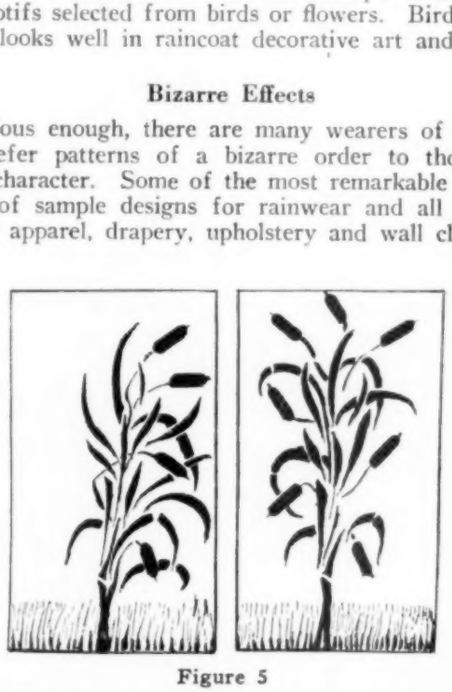


Figure 5
The Poor Balance in the Design at the Left is Corrected in the Design at the Right

seen by the writer in the works of art of the mildly insane of a French asylum when he was overseas with the 8th Division during the war. The strange exhibition was held in the Blue Gallery in Paris and there were textile manufacturers there for the purpose of selecting and buying the rights for use of designs which they considered the public would be attracted by, when properly portrayed in dresses or in carpets. The erratic wielders of the brushes often accidently created a seller.

The design in contemplation may be for a cape coat with a hat of the same material to match, or for a cotton twill shower print cape alone, or for rubberized lustre raintogs in general. Furthermore, the design may be made up on the geometric principle or rendered fanciful in form and color. Or the design may be made up of a combination of the forms existant in the different divisions. In either case, a good structural balance is essential in the presentation of the motifs, for without this element the pattern will be one-sided and not pleasant to look at. In the geometric division of designs the poorly balanced appearance is caused by heavier or more conspicious motifs

being placed on one side of a given line than on the other, resulting in a lop-sided affair which is detrimental to the artistic alignment of the parts. The abstract designs which are being used for decorating the rainwear of the present are designs which have been developed from bird, animal and flower life without actually using the original forms of these objects. No attempt is made to reproduce the original forms and only such parts as will appear well and fit well in the design in hand are abstracted, such as a wing or a feather from a bird, a certain color from the beautiful coat or a furry animal, a bright leaf or petal or bud or flower from a plant.

And all of these motifs, like the motifs assembled from other sources, must be satisfactorily balanced in the pattern in order to gratify the eye of even those persons who do not claim to know much about symmetry or unity in decoration. This point is illustrated in Figure 5 in which it will be noticed that the design at the left tilts over in a one-sided manner due to the artist having placed more of the material on the right of the axis of the stem. The figure seems to droop over towards the weightier side, thus impairing the looks of whole design.

Bright Colors for a Cloudy Day

The psychological effect of brightly colored and artistically designed raincapes and raincoats on traffic during wet and foggy days is apparent. Umbrellas that take up space are unnecessary to the wearers of the shower-proof garments and in their place are raintogs that in most cases are delightful to see. The fact that distinctiveness is desired and sameness is avoided by the women and the girls who are making the attractive rain garments popular, is presenting something of a problem to the designers, the manufacturers and the distributors of this line of wearing apparel. Rainwear to suit the seasons and the occasions on which it is worn is plentiful in the stores that handle women's garments. But the average woman wants individuality in her raincoat the same as in her dress and hat. For this reason the question of distinctiveness has attained important proportions in the rubberized garment field. This end is sought through the medium of variety in both colors and patterns used on the garments. One representative of a large rainwear manufacturing company told the writer that a special effort was made by his company to equalize the allotment of fanciful colors and designs in the different territories covered. This policy tends to prevent excessive repetitions of patterns in the same cities and towns.

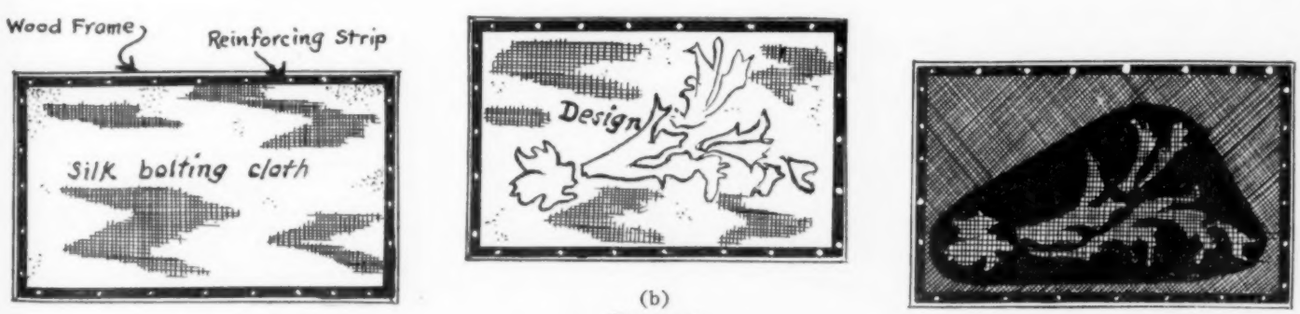
There are some wearers of rainwear who prefer oddity in the ornamentation of their coats and capes rather than something of a more conservative order. Hence the labors of the designers who have gone aside far enough to produce designs lacking in unity and measure in their composition may be seen on the street and at the resorts almost any misty day.

The idea of the costumist is to produce colors and designs in rainwear which shall be like the colors and designs in woolen, worsted, rayon, silk or mixed goods in a cloak, dress, or apparel worn by the women or girls. They are inclined to look upon raincapes and coats not as a protection again stormy weather so much as an ornament to please the eye and drape well.

But rainwear is intended for bad weather and really gets wet when it rains, and unusually when worn the sunlight is absent and there are fogs and shadows. Colors and designs that stand out nicely and brightly in sunlight may appear dull and unsatisfactory in the dull light of bad weather. Applied ornamentation that pleases in a clear natural or artificial light may displease in the mists of a rain storm. Another thing, a color or a design that will do for velvet, velveteen or plush will hardly do for the smooth, glossy surface of the kind of material that modern raincoats are made of. The pile in the former goods can produce a light refraction very different from that of the flat surface of a rubberized fabric. So the element of measure enters the rainwear pattern. Measure has to do with sizes and proportions of the parts in the design. It has to do with the colors as well as with the areas and the lines of the design. Contours and forms of motifs that might do very well for the other wearing apparel for women, might not do for rainwear. Motifs are in vogue for raincapes in particular, some large, some small and some without any special size but distributed above or below an imaginary axis situated in the center or at one side of the cape as the cape drapes over the shoulders of the wearer.

Printed and Stenciled Rainwear

The machine printed raincoats and capes are printed on roller presses the same as calico is printed. The hand painted ones are traced with a design and the design is then worked out in its varied colors with pigments that will not impair the rubber. The stencil printed rubberized fabrics for rainwear are provided with a colorful pattern with a set of stencils, one stencil for each color, made up on a wooden frame on which silk bolting cloth is stretched and secured with tacks and re-inforcing strips. Then the design to be made is marked out on the silk bolting cloth and the surface not occupied by the design is made opaque with shellac. This frame is placed upon the rubberized surface to be printed and the color is applied through the unshellaced parts which are about the same as cut-outs in any card board, paper or sheet metal stencil. A sponge or a brush is used for this purpose. As many separate stencils are required as there are colors in the design, and only that part of the pattern which is to be colored with each stencil is printed at one time.



(a) (b) (c)

Figure 6
Stenciled Designs

(a) A Stencil is Made by Attaching Silk Bolting Cloth to a Wooden Frame. (b) Then the Proposed Design is Marked Out on the Silk. (c) The Surface Not Occupied by the Design is Made Opaque With Shellac

America's Export Tire Trade in 1930

UNITED States exports of automotive rubber goods declined from a value of $43,092,450 in 1929 to $35,283,800 in 1930—a decrease of 10 per cent, according to the complete figures of the Department of Commerce. Although exports declined in value compared with the previous three years—a comparison by volume would show much better results. Values during 1927 and 1928 were greatly inflated by the high market price of crude rubber, and it may be said that the reduced remunerative returns for 1930 are attributable, to a certain extent, to the extremely present low price of the raw material. Other contributing causes are the world-wide economic depression and the increasing competition of other nations.

United States Exports of Automotive Rubber Goods

	1929			1930		
Item	*Quantity*	*Value*	*Unit Value*	*Quantity*	*Value*	*Unit Value*
Truck and bus casings, number	293,502	$ 7,757,257	$26.43	467,728	$10,443,839	$22.33
Other auto casings, number	2,685,936	27,593,926	10.27	2,216,566	19,140,158	8.64
Automobile inner tubes, number	2,044,598	3,641,856	1.78	1,726,366	2,898,335	1.68
Automobile solid tires, number	49,029	1,461,752	29.81	30,143	960,575	31.87
Other casings and and tubes, number	213,936	614,928	2.87	114,812	267,493	2.33
Other solid tires, pounds	1,642,842	298,008	.18	1,518,521	257,783	.17
Tire repair materials	.....	1,724,714	.....	.....	1,315,599	.....
Totals	.....	$43,092,441	.....	.....	$35,283,779	.....

A bright feature in the United States trade for 1930 was the large gain in exports of truck and bus casings—from 293,502 units in 1929 to 467,728 in 1930, or an increase of nearly 60 per cent. Although this advance is offset to a certain extent by the decline in solid tires—from 49,029 in 1929 to 30,143 in 1930—it is a well-known fact that there is a steady demand for the heavy-duty casing from United States factories.

Comparative Figures for Principal Markets

Passenger-car casings declined by 17 per cent in volume for 1930 as compared with the previous year. Along with this decrease went a 16 per cent drop in exports of inner tubes. Many changes occurred in the tire line-up for 1930 as compared with recent years. Argentina remains the principal market, but Brazil and Belgium among the leaders for 1929 have been supplanted by other countries. The following table shows the principal markets, arranged according to their relative standing for 1930.

Exports of Automobile Casings from the United States to Principal Markets

[Number]

Country of destination	1927	1928	1929	1930
Argentina	305,114	223,110	292,555	244,203
Japan	81,171	115,598	130,920	145,716
Mexico	94,687	126,446	160,074	133,908
Spain	99,314	108,056	118,908	130,861
Denmark	125,898	129,655	139,451	128,041
Hawaii	113,510	110,778	127,032	121,438
Cuba	135,469	108,063	138,170	120,785
Philippine Islands	112,166	106,128	114,340	112,898
British India	80,137	73,743	92,536	110,443
Netherland East Indies	64,281	56,064	118,267	107,926
Belgium	28,724	76,403	134,948	97,966
Sweden	80,936	94,191	84,388	87,369
Brazil	157,207	140,209	159,445	84,718
British Malaya	45,546	89,824	101,006	83,814
Italy	43,863	95,604	79,556	81,486
Netherlands	55,835	53,187	48,980	70,236
Other countries	1,187,300	976,837	938,862	822,486
Total	2,811,158	2,692,896	2,979,438	2,684,294

Paragutta

A NEW product in the field of rubber compounds, known as Paragutta, is the subject of a recent article in the *Journal of the Franklin Institute*, by A. R. Kemp, of the Bell Telephone Laboratories, New York City. The characteristics of the new product make it particularly suitable for the insulation of submarine telephone and telegraph cables.

Paragutta consists of a mixture of purified gutta-percha or balata with crude rubber from which the nitrogenous bodies have been almost completely eliminated.

The new product brings rubber into use for submarine cable insulation, a field from which it has heretofore been excluded. The low price of rubber and the great volume of supply as contrasted with the more expensive gutta-percha or balata and their limited supply are additional advantages.

The method of freeing the rubber of its nitrogenous constituents is to heat it in an autoclave at an elevated temperature of 150 degrees C., for approximately 10 hours, in the presence of water alone. The best results, it is stated, are obtained by the treatment of latex. After cooling it is coagulated with acetic acid and thoroughly washed. The other steps in the processing of paragutta are very similar to those used for gutta-percha and involve blending and washing the deproteinized rubber and deresinated balata or gutta-percha together, masticating to remove excessive water and at the same time incorporating such waxes as are necessary. The material is then strained through fine sieves and kneaded to remove air and finally placed on the covering machine rolls to be forced around the conductor. No vulcanization process is involved.

I. R. I. Re-elects MacFadyen

AT the ninth annual general meeting of the Institution of the Rubber Industry, held at the First Avenue Hotel, London, on January 21, the officers and council were elected for the year. Eric Macfadyen was re-elected president.

The following vice-presidents were elected:

Sir George Beharrell, George Beldam, A. Bendixsen, Sir Stanley Bois, Colonel J. Sealy Clarke, Hugh C. Coles, Rt. Hon. Lord Colwyn, Rt. Hon. Sir Eric Geddes, J. G. Hay, Alexander Johnston, L. V. Kenward, H. G. Montgomery, C. Paine, H. Rogers, P. Rosling, Sir Frank Swettenham and D. F. L. Zorn.

Canadian Footwear Exports in 1930

CANADIAN exports of rubber boots and shoes to foreign markets during the calendar year 1930 numbered 1,729,563 pairs valued at $2,742,687 and canvas rubber-soled footwear was shipped to the amount of 6,168,128 pairs valued at $4,339,998. This compares with 2,319,938 pairs of rubber boots and shoes valued at $3,546,853 and 9,289,896 pairs of canvas rubber-soled shoes valued at $6,190,707 shipped from Canada in the calendar year 1929. The United Kingdom, New Zealand and the Argentine continued to be the important markets for Canada's foreign trade in footwear.

Canadian Tire Exports in 1930

DURING the calendar year 1930 Canada exported 1,376,048 pneumatic casings, valued at $12,773,773 as compared with 1,746,950 casings in 1929 valued at $18,320,357. The Argentine continued to be the largest market for Canada. Exports of inner tubes also declined to 1,211,042 in 1930 as compared with 1,644,719 in 1929.

Toxic Substances *in the* Rubber Industry

PART XIX

By **P. A. DAVIS, A.B., M.A., M.D.**
Assistant Medical Director, Goodyear Tire & Rubber Company

Sulphur and Derivatives

SULPHUR is one of the constant constituents of rubber and without it the process of rubber manufacture would be very much limited. Sulphur or one of its derivatives is present in most every process and since the elemental form is not very toxic very little attention is given to it. However, certain conditions develop from constant handling of it.

The most common forms of sulphur and its compounds that are used are as follows:

Sulphur Forms:

Precipitated
Sublimated—Flowers of sulphur
Washed
Crude or natural sulphur

Sulphur Compounds:

CS_2	PbS
H_2S	CdS
FeS	Sulphates
As_2S_3	Thio Compounds
Sb_2S_3	Sulphates
SO_2	Mercaptans
ZnS	
$SOCl_2$	

Several of these have been discussed as the compound itself. Sulphur as the elemental substance is not toxic in extremely large doses as it has been demonstrated by its use in medicine. However, the constant use of sulphur as a medicine when taken in large doses may product a gastro-enteritis, nephritis and hepatitis. Sulphur taken into the system is liberated by

1. Skin
2. Kidneys
3. Bowels
4. Respiratory System

If the intestinal tract or kidneys fail to excrete, the individual has some vague pains in the muscles and joints due to suspended sulphur metabolism and the sulphur eliminated by the skin is increased.

The men who handle sulphur, several hundred pounds a day, have very few complaints and these are not serious.

1. Slight conjunctivitis
2. Slight coryza
3. Dryness of skin
4. Occasional bronchitis
5. Occasional sore throat
6. Occasional dermatitis

If vulcanized products have an excess of sulphur and it blooms out, it is a common thing to have a dermatitis develop where the rubber comes in contact with the skin. This occurs more often in fair skin individuals and in those who have an acid perspiration.

Sulphur, when mixed with some fat base and used as an ointment often causes a dermatitis. Commercial sulphur may have present some sulfuric acid and this causes a dermatitis. Sulphur which is taken internally does not cause any particular systemic effects, but its combinations in the intestines such as H_2S and sulphides may cause some systemic manifestations. Sulphur may be taken in dram doses and as such cause a slight irritative effect on the gastro-intestinal tract to such an extent that it may overcome some constipation.

The dermatitis that is caused by handling dry powdered sulphur is a dry condition, the skin cracks and produces a burning and itching sensation. In some cases it is only a hyperemia.

Occasionally one observes a dermatitis where some rubber article comes in contact with the skin. This may be caused by two factors other than directly ascribed to sulphur.

1st. The perspiration of the individual may be acid, the skin hypersensitive or an extreme oily skin. Oils and grease seem to activate the sulphur action on the skin.

2nd. There may be a bloom on the rubber article containing sulphur crystals that may produce an irritation by mechanical means or there may be sulphur derivatives present. This can be detected by using the ultra microscope. In general there has been very little consideration given to sulphur because of its apparent non-toxic nature and because it is used as a medicine, however, there are many slight conditions that develop as has been noted, that the industrial man must have knowledge of.

The compounds of sulphur are very toxic and those most commonly used are CS_2, H_2S, $SOCl_2$, SO_3, SO_2, SOCl, H_2SO_4, sulphites, sulphides and thio-compounds.

The use of liquid sulphides and chlorides is gradually being decreased because vulcanization by heat is replacing the cold processes and sulphur is being used. The process of starting with pure rubber from the tree and producing some finished product is a mystery in many respects so far as the chemistry is concerned. We know of many basic reactions and there are many more side reactions about which we know very little. This is very true of sulphur. How many sulphur derivatives form in a reaction when a batch of rubber is milled and vulcanized is not known, probably never will be known as industry is concerned principally with the quality of its product and not whether there is formed .0001 per cent. phenyl mustard gas or minute thio-bodies. If the product meets specifications and is of superior quality the minute details are for research to discover.

Just recently we have had a very unique experience. A man who was working with finely divided sulphur, in some manner succeeded in getting the surrounding atmosphere saturated with it and a static spark from the machine set off the sulphur causing a flash, some of which he inhaled. This produced a very irritative bronchial condition which has lasted for several weeks and he says he constantly tastes sulphur. This is aggravated when he is present where there are sulphur fumes. The irritating factor was SO_2 and he describes the condition as one of strangulation. Such an occurance is rare, but it is possible where there are combustible dusts.

Occasionally some sulphur dust is splashed in the eyes and a severe conjunctivitis develops.

However small the possibilities of any difficulty with handling sulphur, certain preventive measures should be used.

1. Adequate ventilation (suction).
2. Gloves and long sleeves for arms and hands.
3. Goggles and respirators where there is much sulphur dust.

4. Inspection of departments and examination of the men.
5. Prevention of the fumes of benzol or other volatile explosive substances from collecting where finely powdered sulphur is being handled.
6. Protection of the skin by a protective ointment where necessary.
7. Placing of dark skinned individuals on jobs handling sulphur.

If these precautions are observed there will be only rare conditions develop. Should any of the following conditions develop:

1. Dermatitis
2. Bronchitis
3. Laryngitis
4. Conjunctivitis
5. Coryza
6. Gastritis or Gastro-Enteritis,

they should be treated by:

1st. Removal from contact with any sulphur or its compounds or any other irritating vapors.

2nd. Treating the dermatitis with boric acid ointment which contains some spermaceti wax.

3rd. Alkalinization of the system.

4th. Treat bronchitis with sedative cough mixture containing codiene but no ammonium chloride.

5th. Treat laryngitis with oil sprays and Tr benzoin compound inhalations.

6th. Treat conjunctivitis with eye washes containing boric acid and camphor, followed by argyrol ointment.

7th. Coryza treated with oil sprays.

8th. The gastritis and gastro-enteritis should be treated by diet, which is free from acids, roughage, sulphur compounds and sulphur protieds. Irritative cathartics should not be given. Liquid petrolatum should be given in large doses. Large quantities of water and milk should be given.

Practically all cases clear up in a short time if treated and removed from contact with sulphur. Occasionally a bronchitis caused by fumes of sulphur is stubborn in yielding to treatment, also a dermatitis which develops to the point of exuding any serum.

Many inorganic sulphides are used as ingredients in rubber. They may be non-toxic in their original state but when added to a rubber mixture and subjected to heat and the influence of other substances, a toxic substance containing sulphur may result. Some of these substances may eventually bloom out of the rubber. Rubber articles of wearing apparel that develop a bloom should not be placed next to the skin unless the composition of the bloom is known and it is proven to be non-irritating to the skin.

Conclusion

During the last fifteen years we have not experienced any serious results from the use of sulphur. We have constantly observed the necessary precautions and should any slight conditions such as conjunctivitis, dermatitis, etc., develop, we correct it at once. Dark skinned individuals and vegetarians very rarely develop a dermatitis from contact with sulphur.

Individuals who have chronic nasal conditions, laryngitis, bronchitis, tuberculosis and a chronic conjunctivitis should not work in sulphur. If all precautions are taken as to ventilation, placing of individuals, and instructions as to body cleanliness are adhered to one should experience no trouble at all.

Rubber Flooring in France

WHILE rubber flooring is not yet very extensively used in France, it is becoming more and more popular for banks, hotels, bars, stores, and similar establishments. It is said that the consumption has considerably increased in the last three years, according to reports of the Department of Commerce.

Rubber flooring is produced in France in thicknesses varying from 3 millimeters to 8 millimeters. The 3-millimeter variety is used to cover tables and in places where the wear is not very important; 5 millimeters is the thickness generally used and recommended for floors in private houses, while 6 and 7 millimeters are used in banks and hotels, where the extent of wear is heavy.

Rubber flooring is used in France in private homes, in bathrooms, children's rooms, sometimes in dining rooms, but more especially in service hallways where it has the great advantage of entirely suppressing all noise. While it is not yet used in private homes to any great extent, because of its high price, it is believed that when its wearing qualities becomes better appreciated it will become more and more popular.

Rubber flooring is now being used widely in new buildings of all kinds. It can be laid out directly on concrete, without any special preparation; the simplicity of this process reduces the cost of the finished floor. The difficulties first encountered in laying rubber flooring have not been entirely overcome, and this process is no longer a hindrance to the producers.

The sidewalk in front of the Paramount Theatre in Paris has been laid with a special rubber composition flooring, the product of a French manufacturer (the Societe Electro-Cable). This flooring is 8 millimeters thick, and was approved by engineers of the city following tests concerning the nonskid qualities of the special composition used.

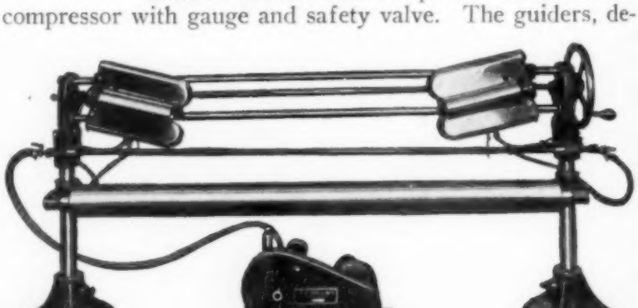
The principal producers of rubber flooring in France are the following, in order of importance: Societe Electro-Cable, Paris; Societe Industrielle des Telephones, Paris; Establissements Hutchinson, Paris; Etablissements Beldam-Latty, Paris.

The British firm, the North British Rubber Company, of Edinburgh, also has a branch in Paris and is said to operate a small plant in France.

The Societe Electro-Cable is reported to produce monthly 6,500 square meters of rubber flooring in its plant located at Rouen and specially devoted to this line of goods. The other producers each operate a plant, in some cases also producing tires or other rubber articles. These smaller manufacturers are said to produce another 6,500 square meters monthly.

Foxwell Guiders

NEW improvements on the Foxwell Guiders, manufactured by the H. W. Butterworth and Sons Company, Philadelphia, Pa., now permit units to be furnished complete with motor and compressor with gauge and safety valve. The guiders, designed for the feeding of fabrics into such machines as mangles, winding and calendering equipment, require only fifteen pounds of air to operate and can be easily removed from one machine to another, and operated at all speeds.



Foxwell Guider Unit

The unit has a ¼ h. p. motor, which, through a silent chain, drives an air compressor of special design. Motor and compressor are designed for constant operation and are mounted on a cast iron base. No tank is required, as the pressure in the pipes takes care of the operation of the guiders.

Export Trade in Rubber Goods Drops Sharply in 1930

United States Shipments of All Rubber Products Only Totaled $62,423,293 Representing a Decline of 23 Per Cent from the Total of 1929—Severe Competition Is Growing from All Rubber Goods Manufacturing Countries

THE United States was not alone among the other rubber goods producing countries of the world in experiencing a decline in export trade in these lines. According to the latest and most complete official statistics, as reported by the Department of Commerce practically every principal rubber-goods exporting country, with the exception of Japan, has suffered some decrease. United States exports of rubber products for the past year were valued at $62,423,300, which is a 23 per cent decline when compared with 1929, but only a 16 per cent decrease from 1928.

Many factors have been responsible for the decline—in fact, all the obstacles that bring about a reduced participation in foreign markets. The most outstanding is the economic depression which is now apparent in every trading country in the world. Secondary factors are the low market price of the crude material and increased competition.

Inasmuch as industrial activities have been retarded in almost every country and, with the consequent unemployment, have reduced the purchasing power of almost every individual, when it has become essential to replace worn-out rubber goods, consumers for the most part have bought on a price rather than a quality basis, and in this respect the products of the United States have suffered at the hands of foreign competitors.

Foreign Competition Becoming Formidable

The competition of other countries in the international trade should not be overlooked. Each year the competitive factor becomes more and more apparent in the United States trade.

There is a growing tendency on the part of foreign countries to become more self-sufficient in products necessary for the national existence. At the present time, rubber products are considered indispensable by all advanced nations. As a consequence, foreign countries each year are encouraging local development of rubber, through legislation. Such legislation sometimes takes the form of subsidies, sometimes promulgation of tariff legislation, and often by requiring all official and semi-official departments of the Government to purchase only domestic-made products. The citizen is urged for patriotic and economic reasons to support local industries by buying home products. Thus, the United States rubber goods are meeting each year with greater and greater competition from factories in foreign lands.

In foreign competition the United Kingdom, Canada, Germany and Japan have given the United States manufacturers in many markets greater opposition than in recent years.

Value of United States Exports of Rubber Goods

Item	1928	1929	1930
Automotive rubber goods...	$41,203,869	$43,092,441	$35,283,779
Rubber footwear	11,811,628	14,192,296	9,081,354
Mechanical rubber goods ...	7,225,263	8,251,624	6,210,758
Miscellaneous rubber goods.	14,230,673	15,185,303	11,847,402
Total	$74,471,433	$80,721,664	$62,423,293

In the tire trade United States* exporters now find competition difficult, owing to customs duties protecting local industries in the United Kingdom (once our best market), Canada, Argentina (in recent years our leading outlet), Italy, Soviet Russia and Australia. The United States, however, continues to ship certain quantities of tires to Germany, Hungary, Sweden, Belgium, Austria, Denmark and Czechoslovakia, but each year the respective domestic industry is supplying a greater portion of the internal consumption.

During 1930 the United States experienced stiffer tire competition on the part of the British producers—especially in continental markets. In addition to the British opposition, Germany has been extending its export trade with good results in almost all markets, while Japan has given greater competition in the Far and Middle East.

Footwear Markets Decline

In no branch of the rubber goods trade has competition been so formidable as that of rubber footwear. Until 1930 the United States was the leading nation exporting rubber footwear, but the advance of Japanese exporters has forced the United States during the past year to retire from first honors. Other keen competitors are Canada, Soviet Russia, Germany, Sweden, British Malaya, Belgium and Austria. Although United States rubber footwear is known for its superior workmanship, our local manufacturers are finding it almost impossible to compete on a price basis with the European and Oriental products.

In rubber sundries and specialties Germany is giving each year greater competition. Other countries competing in this trade are Japan, Austria, France, the United Kingdom and Belgium.

United States exports of automotive rubber goods declined by 10 per cent in value during 1930 as compared with

*EDITOR'S NOTE: A more detailed account of the tire export trade will be found on page 512.

1929. In addition to customs duties for protection of foreign industries, the necessity of increased Government revenue has caused increases in tire tariff rates in several markets, which has tended to retard buying after application of the increase.

Exports of rubber footwear decreased from a value of $14,192,296 in 1929 to $9,081,354 in 1930, or by 25 per cent. In addition to lower demand and the strengthening of the domestic industries in many countries, competition from former minor rivals in the world trade has been pronounced—perhaps more in this class than any other branch of the rubber industry. Japan, Soviet Russia, Germany, Czechoslovakia and other countries by underselling have cut heavily into the United States trade, with the result that the United States has lost somewhat its former leading position.

Mechanical Goods Decline 23 Per Cent

Exports of mechanical rubber goods decreased from a value of $8,251,624 in 1929 to $6,210,758 in 1930, or by 25 per cent. Without exception, every item of this class suffered by a volume decline, which was naturally followed by a value decrease. Rubber belting is no longer the leading item in volume and value, but has been supplanted by rubber hose, maintaining its position now for two years.

The trade in rubber belting declined in volume by 24 per cent. Rubber hose exports decreased by 22 per cent in volume.

Exports of druggists' soft rubber sundries and specialties, semi-manufactured rubber products, hard-rubber specialties, proofed goods and rubber products not elsewhere specified, taken as a group, showed a decline of 22 per cent. Despite this value decrease, several items manifested a volume gain. Outstanding in this respect were water bottles and fountain syringes and rubber bands.

Two Head Taping Machine

A NEW taping machine for taping on cable with paper or friction tape is the latest development of the New England Butt Company, Providence, R. I. It is designed to tape on cables of a maximum diameter of 1½ inches. The heads are designed to run at a speed of 580 r. p. m. in opposite directions, and will handle 15-inch diameter taping pads by 2½-inch maximum width. Each head is arranged for a battery of three spares of the above maximum sizes.

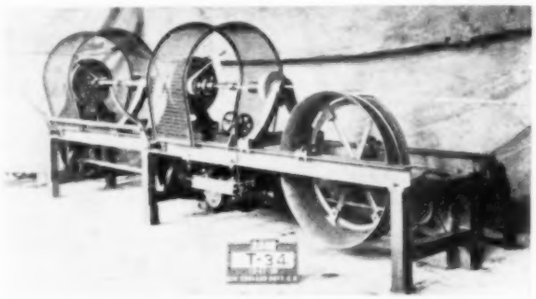
The machine is driven by a five horsepower motor through sprockets and chains and a Westlund clutch, to the jack shaft which is mounted on ball bearings. The front taping head is driven direct from the drive shaft through sprocket and roller chain, and the rear head is driven the same, excepting that a pair of cut spur gears is added to run the head in the opposite direction.

The spindles are mounted on ball bearings with the drive at the rear, with the taping pads mounted on the discs at the other end.

In the threading operation the tape passes from the pad in the center of the disc, around a small roll attached to the peripheral of the disc, then around an adjustable finger, also attached to the peripheral of the disc, down toward the center of the machine, around another adjustable finger whose function is to guide the tape directly to the material covered, through a slot in the spindle. Part of the spindle is cut away to facilitate threading the tape on the wire before starting.

On the extreme end of the spindle is a die which smooths the tape on the wire after it has been taped.

The lays for this machine are ⅝ to 5¾ inch, and are controlled by a Reeves drive, giving them a maximum production of 280 feet per minute. The capstan which is driven through a worm and worm gear reducer, a drive pinion meshing to a large gear that is secured to the capstan. This drive is also arranged to drive the take-up through a



Two Head Taping Machine

large sprocket, and this may be seen on the extreme right hand view of the machine.

The diameter of the capstan is 32 inches by 7 inches face. The Reeves is controlled by a hand wheel through a sprocket and roller chain, and the two handles attached to the side of the frame are for the convenience of the operator when controlling the Westlund clutch which drives the machine. The same handles control a brake for quick stopping after the clutch has been released.

The taping heads are guarded with mesh guards, and are not in the operator's way when threading up the machine for starting.

Howe Weightograph

A NEW departure in weighing devices is the Weightograph, manufactured by the Howe Scale Company, Rutland, Vt. The Weightograph is attachable to any built-in type of beam scale from 1,000 pounds upward. Dial scales are also convertible to Weightograph operation by removing the dial head, the remainder of the scale being retained. When attached to a beam scale which has previously been operated manually by manipula-

Howe Weightograph

tion of the beam poises, the Weightograph provides automatic operation, eliminating the uncertainty and variableness of the human element.

The principle involved is one regularly observed every time one goes to the moving pictures. Much the same, the Weightograph magnifies the movement of the weighbeam by means of a precision chart or negative. Thus the Weightograph employs optical magnification instead of the mechanical multiplication utilized by the other forms of automatic indicating scales. There is no friction, no wear and tear, and no error in magnifying and projecting a ray of light.

*Achieving the New Silhouette**

Rubberized Fabrics Play an Important Part in the Development of the Modern Reducing Garment

By **F. W. Hotchkiss**

Advertising Mgr. Rubber Products, E. I. du Pont de Nemours and Company

(Courtesy of Du Pont Magazine)

The One-Piece Reducing Corset and the Corselette Type of Reducing Garment

AMONG the many decrees dictated by style in women's wear, none has been more arbitrary or more startling in its changes than the one that greeted the world a little over a year ago, when the mandate went out that henceforth the princess silhouette would be the last word in feminine fashion.

Of course it applied to all; the short and tall, the slender and stout. To those whose figures were adapted to this new style this change met with instant approval. Their less fortunate sisters, however, handicapped by excess avoirdupois, faced the serious problem of how to achieve this new silhouette.

And so we have witnessed a great variety of expedients —diets, exercises, reducing apparatus, and a hundred and one methods and theories for removing the excess poundage.

Among the many methods for getting rid of surplus tissue, the one most practical, because it is natural, has been the use of the new reducing corsets made from special rubberized fabrics. The idea is not new, but the garments themselves are a refinement and improvement of the earlier type.

Reducing corsets were first introduced to the trade about 1923. The corset at that time was a pure gum rubber product without fabric of any kind, and whereas it worked well as far as reducing was concerned, it was not very comfortable to wear. In the first place such rubber was absolutely non-absorbent, and the idea of cold rubber next to the skin was also distasteful to many women.

After the development of the pure rubber garment, its effectiveness having been firmly established, adaptations to make this type of garment more comfortable were made by rubberizers and corset manufacturers.

The present-day garment is made of a combined fabric consisting of two specially-knit fabrics cemented together with a high-grade rubber compound. A feature of this new material is that no rubber actually comes into contact with the skin.

These corsets have been used more or less continuously since 1925, although the recent princess silhouette has brought them to the fore again stronger than ever as a scientific and practical method of reducing. The principle on which this reducing corset works is simple enough. Because it is made with rubber and is practically airtight, permitting only a slight circulation of air, it does not allow the body heat to escape. This produces a condition that tends to break down the fatty tissues of the body gradually but surely.

The woman who wears this modern reducing corset does not have to go through any set of exercises. She simply puts it on and wears it during the day's routine. And the exercise of doing her ordinary household duties is sufficient to produce the desired results. It can be worn half a day or more, as may be necessary.

Because of the natural conforming properties of these combined fabrics, this garment gives ample support with the maximum of comfort. In fact, the unusual comfort of this corset has led many women to wear this type instead of the regular foundation garment, even though it is primarily recommended for reducing and not for continuous wear.

The newer lines of corsets, as now produced, eliminates all possibility of having rubber next to the skin. At first glance the material does not appear to be made of rubber at all. A layer of it is placed between two knit fabrics, which may be either cotton to cotton, cotton to rayon or cotton to silk. The cotton fabric is worn next to the skin and is quite absorbent, giving the wearer a high degree of comfort.

Most of the prominent corset manufacturers are now including one or more of these styles in their present lines. They are made in both unboned and lightly boned models, the most popular of which are the corselette, step-in and girdle types.

Any woman who wants to have a slender figure and who has not been so favored by Nature can, by this new method, achieve the desired results. No longer must she forego sweets at the bridge table or the many delicacies that are so unfriendly to her. The rubber reducing corset will help melt away the excess tissue with the maximum comfort and convenience to the wearer.

**EDITOR'S NOTE*: Reprinted with permission from the February issue of the Du Pont Magazine.

EDITORIAL COMMENT

America Grows Its Own Rubber

SEVERAL years ago, when the rubber manufacturing industry in the United States was feeling the annoyances of the Stevenson restriction scheme, one of the leaders in the industry bent every effort to encourage American interests to go into rubber plantation operations. Backing up his own judgment with action, he went into Liberia and is now ready to bring into bearing a huge area of rubber trees and is continuing to plant more. In his effort to stimulate interest in his main idea, all the advertisements of his company carried for years the slogan, "America Should Grow Its Own Rubber."

But another American company has also been going along quietly, developing a comparatively new source of rubber right within our midst. This month saw their efforts come to fruition, when the American Rubber Producers, Inc., a subsidiary of the Intercontinental Rubber Company announced the inauguration of their new plant in Salinas, Calif., where they are running three shifts and producing fifteen thousand pounds of dry rubber per day from the vast plantings of the guayule shrub, which they have been cultivating for the past four years. Because of the prevailing low prices of crude rubber the company has decided not to harvest all of their mature acreage this year, pointing out that conservation now will permit of even a greater yield per acre when times are more advantageous and the guayule has grown to greater maturity. Thus it can be said that America is now producing rubber in commercial quantities from rubber plants grown on its own soil.

Obsolete Equipment

AS industry begins to emerge from the economic depression,—and there can hardly be any doubt that it is so emerging,—it might be well to reflect on some of those factors in the situation, which industry can correct at the first rumblings of a return to normal, and which if not corrected, may easily retard a return to profit making. In a recent address before the Manufacturers Association of Bridgeport, Conn., Assistant Secretary of Commerce, Dr. Julius Klein, tabulated a decalogue of "don'ts" based on the outstanding factors which may retard a revival of good industrial conditions. One of these "don'ts," which can well be given serious consideration by the rubber manufacturing industry was, "Don't overlook the perils of obsolete equipment." He went on to say that it is wiser to have the junk heap of old machinery outside the factory than in it and he made the interesting observation that 48 per cent of the machinery in our own American factories today is over ten years old. He remarked that "the paralysis of advancing senility is all the more dangerous because its stealthy approach is so painless, so easy."

It is true that in general design and principle of operation, rubber manufacturing machinery has not undergone radical changes in the last decade. But it is equally true that new and more efficient models, with improved devices, are being offered to the industry but are not being accepted, except where the old machine has become wholly useless. For too long has it been the set phrase of the purchasing agents, "We don't want to make a change now; the old equipment is good enough." But times are changing. We are on the up-grade. Those who travel the surest will equip themselves with proper and effective apparatus for rapid progress. They will not be overburden with worn-out tools. "Don't overlook the perils of obsolete equipment."

Industry's New Responsibility

WEIGHING past achievements against present problems, Julius H. Barnes, Chairman of the Board of the Chamber of Commerce of the United States, recently expressed the conviction that American business will find a way to lift permanently the shadow of unemployment.

"America," he said, "led the way in developing life insurance, the greatest remover of undefined fear and anxiety that the world has ever seen. America developed that device of life insurance until almost three-quarters of the aggregate of world insurance is held by American companies, although only six per cent of the world population is here. America popularized the device of consumer ownership in service corporations, by which those who pay the public tolls of utilities are interested in the ownership of these utilities from which they buy. Is it too much to hope that American resourcefulness and enterprise may find a way in the field of private initiative to meet the fear and hazard of unemployment?"

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Representatives in all the rubber centers of the United States, Canada, England, France, Germany and the Middle East.

The Rubber Industry's CURRENT NEWS

Financial—Personals—New Rubber Products—
Building Operations—Manufacturing—Exports

PIONEER RUBBER COMPANY INCREASES ITS ASSETS

The Pioneer Rubber Company, Willard, O., manufacturer of toy balloons and rubber gloves, took advantage of the generally slack conditions during 1930 to re-equip its plant, installing the most modern and economical machinery, and thus materially increasing its physical assets. The year was not so profitable as others in earnings, according to J. C. Gibson, president, but the company profited more than in any previous year in improved methods, refinements and installations designed to produce better products.

The company's balance sheet at the end of 1930 shows machinery and equipment at $414,132 as compared to $270,072 at the end of the previous year. Total assets were listed at $814,598 as against $693,086 at the close of 1929. Sales for 1930 were reported as over $500,000.

C. C. Hessler, cashier of the company, was elected a director, succeeding W. R. Richards, who resigned. Directors re-elected were J. C. Gibson, John Clay, K. L. Milligan and R. K. Williams. Officers elected include Mr. Gibson, president and treasurer; Mr. Clay, vice-president; and Mr. Milligan, secretary. Mr. Milligan is also sales manager, while other executives include R. H. Coovert, superintendent; Raymond Clark, assistant superintendent; and Ernest Shellenberg, export manager.

Shifts Advertising Account

The advertising of the Electric Hose & Rubber Company, Wilmington, Del., is now being handled by the Baltimore office of the Thompson-Ellis Company. Magazines and direct mail will be used to develop a market for the company's products.

Mechanicals Firm Organized

The R. V. Afflerbach Rubber Company, 175 Smith Street, Perth Amboy, N. J., has been incorporated with a capital of $125,000 to manufacture various kinds of hose, belting and packing. Harry Afflerbach of Perth Amboy and Robert Afflerbach of Metuchen are the officers of the company.

Great Lakes Rubber Expands

The Great Lakes Rubber Products Company, manufacturer of hard rubber products, has leased space for a second plant in Cleveland, O. The lease covers 15,000 square feet in the Cleveland Hardware Building at East 45th Street and Lakeside Avenue and is for six years at $20,000 rental. The company now has a plant at Independence Road and Broadway S. E. in the same city.

New Adamson Manager

Clyde B. Mitchella, who has just assumed his new duties as general manager of the Adamson Machine Company, Akron, O., manufacturers of rubber working machinery, and has taken up residence with his family at 496 Roslyn Avenue in that city. Mr. Mitchella, who is well known in Akron, as he was educated in the public schools there, has taken over most of the duties handled by Russell B. Koontz, formerly president of the company. For five years chief engineer of the Republic Rubber Company, Youngstown, O., and before that connected with the engineering department of the B. F. Goodrich Company, Akron, O., he is considered an expert engineer and has done much in the development of machinery for producing better rubber products. Mr. Mitchella has been active in the Youngstown Rotary Club and in the Masonic order in Ohio and was previously interested in civic affairs in Akron.

Waste Material Dealers Meet

The 18th annual convention of the National Association of Waste Material Dealers, Inc., is to be held at the Congress Hotel, Chicago, Ill., on March 16, 17 and 18. Owing to the many important problems before the industry at this time, the association will throw its business sessions open to the entire industry and many nonmembers are expected to attend. The Scrap Rubber Division will have its meetings on March 18.

New Wishnick-Tumpeer Office

Wishnick-Tumpeer, Inc., New York City, has opened a new office at 523 Guardian Building, Cleveland, O. Julius Tumpeer, vice-president of the company, will be in charge of the new office.

LYCOMING RUBBER PLANT CURTAILING PRODUCTION

Since January 26, the plant of the Lycoming Rubber Company, Williamsport, Pa., a subsidiary of the United States Rubber Company, has been operating at 40 per cent of capacity and, according to Clarence L. Wanamaker, factory manager, will continue at that rate until March 2. About 300 operatives, mostly women, were without work during the month of February.

Mr. Wanamaker explained that the waterproofing department was hardest hit because of the light demand for waterproof footwear, and the decision was made not to add to the already large inventories. Production in the tennis shoe department continues good and is piling up stocks for summer sales.

During the month of January the factory operated at 65 per cent of capacity. Mr. Wanamaker hopes for a return nearer to a normal schedule early in March.

Sunbury Tire in Production

The Sunbury Safety Tire Company, Sunbury, Pa., is now in production on machine molded inner tubes and expects soon to increase its capacity to 2,500 tubes a day. The company maintained an exhibit at the local automobile show, displaying its puncture-proof tube and tubeless tire and its airplane tires. Ira Trautman, president of the firm, announced recently that a new household rubber article would be added to its line.

Anaconda Patent Suit

The Anaconda Wire & Cable Company, subsidiary of the Anaconda Copper Company, has filed a motion in the United States District Court at Wilmington, Del., for dismissal of the patent infringement suit filed against it recently by Edward H. Angier and the Angier Corporation, Framingham, Mass. The suit alleges infringements of the patent for paper used for wrapping automobile tires, wire and hose.

Goodyear Aids Court Survey

A fund established through Johns Hopkins University to make possible a careful study of the court record system in Ohio has been materially helped by a donation of $6,000 from the Goodyear Tire & Rubber Company and by gifts from several other rubber firms. Donations of $1,000 each were made by the Firestone Tire & Rubber Company and T. B. Tomkinson of the B. F. Goodrich Company. The Ohio project is part of a nation-wide plan to compile helpful statistics of criminal, divorce and civil litigation.

A. S. T. M. TEXTILE GROUP WILL MEET IN NEW YORK

Members of Committee D-13 on Textile Materials of the American Society for Testing Materials will meet in New York City on March 12 and 13, with headquarters at the Hotel Victoria. After subcommittee meetings on the morning of the first day, there will be an evening banquet at which motion pictures of the complete silk industry will be shown.

The second day's program will include a visit to the U. S. Testing Company at Hoboken, N. J., a luncheon and general session at the Hoboken Y. M. C. A., and a theatre party in New York.

Swann Buys Lamp Black Firm

Wilckes, Martin, Wilckes Company, manufacturers of lamp blacks and phosphates, has become a division of the Swann Corporation. The Swann Corporation of Birmingham, Ala., is a holding company formed for the purpose of unifying the operations of a number of companies in the chemical manufacturing field.

New United Conveyor Office

The United Conveyor Corporation, Chicago, Ill., opened an office last month at 101 Park Avenue, New York City. J. J. McNulta, formerly in sales and engineering work with the Girtanner Engineering Corporation, will direct the office and be in charge of the New York and New England districts.

Western Reserve May Move

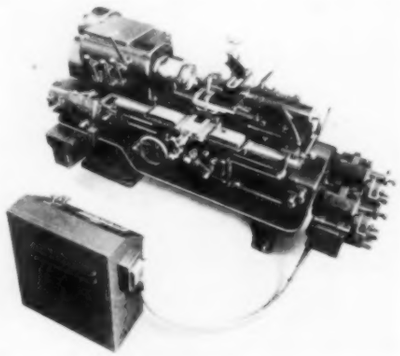
The Western Reserve Rubber Company, manufacturer of toy balloons at Akron, O., is seeking factory space at Canton, O., according to newspaper reports. The decision of the company to move is reported to have been brought to the attention of the Canton Chamber of Commerce, and suggestions are being made as to available sites.

Paul E. Werner

Paul E. Werner, Akron publisher and tire manufacturer, died February 6 at 80 years of age. Born in the Swabian Alps, then in the Kingdom of Wurttemberg, he came to America and Akron when 17 years old and in 1873 became associated with *Akron Germania*, a local paper in the German language. A few years later he was responsible for the merger that created the Akron *Beacon Journal*, leading daily newspaper in that city, and he built up the publishing business that is now the Superior Printing & Lithographing Company, becoming the largest individual employer of labor Akron had known up to 1895 and for a considerable period thereafter. After reverses in the publishing business he established the Kansas City Tire & Rubber Company, but lost control of that enterprise when the World War came. He returned to Akron in 1928 to become again editor of *Akron Germania* but retired last September. He was a lifelong friend of F. A. Seiberling and many others prominent in the rubber industry.

Automatic Form Turning Lathe

The Monarch-Keller automatic form turning lathe has been introduced by the Monarch Machine Tool Company, Sidney, O., for the rapid and economical production of all types of dies and molds. The Keller



automatic control will duplicate the master template to limits as close as .001 in. Among the classes of work for which it is especially adapted are punches, dies and molds, mill rolls of various shapes, rolls for bending up sheet metal for tire rims, and turning or facing special shapes in any form for which a thin master template can be made.

15,000,000th Allstate Tire

Shortly after the first of January, 1931, the 15,000,000th Allstate tire was sold by Sears, Roebuck & Company, Chicago mail order and chain store organization. The Allstate tire was first placed on the market at the end of May, 1926, and the company sold its 10,000,000th tire on October 31, 1929. Practically all of the company's tires since its entrance into the private brand field have been produced by the Goodyear Tire & Rubber Company.

N. J. Zinc Earnings Lower

The New Jersey Zinc Company has reported for the year of 1930 a net income of $5,013,403, equal to $2.55 a share on outstanding common stock. This compares with earnings during 1929 of $9,221,794, or $4.69 a share.

J. E. MAPLES, tire building department manager of the Firestone Tire & Rubber Company, was elected president of the Yale Club at the annual meeting last month in the University Club, Akron, O. He succeeds NORMAN SHEPHERD, chief of the Firestone research division. GREGORY SHIRK, of Otis & Company, was named vice-president, and PAUL RAISH, of the Firestone real estate department, was elected secretary-treasurer.

R. S. WILSON, vice-president and sales manager of the Goodyear Tire & Rubber Company, presided at a sales meeting of field representatives of the company's Denver and Salt Lake City branches last month at the Brown Palace Hotel, Denver, Col. W. D. SHILTS, secretary of the company, was also present during the two-day conference and addressed the representatives.

ROYAL E. DAVIS FINDS TIRE RENEWALS AT LOW

Renewal tire sales have reached bottom and some upturn is in order, according to Royal E. Davis, of the Goodyear Tire & Rubber Company, who addressed the 92nd annual meeting of the American Statistical Association at Cleveland last month on phases of the industry. He pointed out that because tire sales activities have moved two to six months ahead of general business, both on the downswing and on the upswing, and because of the probable general upturn in general business, current stocks of dealers' stores, low tire price levels, condition of tires in operation, improvement in the tire business is due.

Among the interesting facts about the business of the tire industry presented by Mr. Davis was the statement that current tire prices are the lowest they have ever been, 65 per cent below 1914, while all wholesale commodity prices are 25 per cent higher. At the same time the public is getting 15,000 to 20,000 miles on tires, he said, compared to 3,000 miles back in 1914 when it paid nearly three times as much for them.

Du Pont Earnings Lower

E. I. du Pont de Nemours & Company and subsidiaries for the year of 1930 show net profit of $55,962,009 after all charges, compared with 1929 earnings of $78,171,730. The surplus account was increased during the year to $208,082,665 from $144,920,215, of which $7,684,228 resulted from the acquisition of the Roessler & Hasslacher Chemical Company, representing value of the net tangible assets acquired in excess of par value of 241,130 shares of common stock issued therefor.

Rubber Stocks Are Higher

Securities of leading rubber companies closed the fortnight steady and somewhat higher in sympathy with the bullish market that has featured the past two weeks. Goodyear and United States Rubber were especially strong. Closing prices on February 18, compared with the close on February 5 and with the high and low thus far in 1931, follow:

	Last Price		—1931—	
	Feb. 18	Feb. 5	High	Low
Aetna	—	—	5	3¾
Ajax	—	—	½	¼
American Hard Rubber	—	—	—	—
Dayton "A"	—	—	—	—
Falls	—	—	—	—
Faultless	—	—	37	35
Firestone	17¾	—	18¼	17
do. 6% pfd.	—	58¾	63	58
Fisk	¾	⅝	¾	½
do. 1st. pfd.	—	—	2⅞	2
General	—	—	95	81
do. pfd.	85	—	87½	83
Goodrich	17¼	16¼	18	15¼
do. pfd.	—	—	65	60
Goodyear	45¼	41¼	48	38⅜
do. 1st pfd.	—	—	85	81
India	—	—	13½	8⅜
Intercontinental	3	—	3⅞	2
Kelly-Springfield	1⅞	1¾	2	1⅜
do. 6% pfd.	—	—	35	35
Lee	3⅝	—	4	3½
Mohawk	—	4¾	5½	3
do. pfd.	—	—	—	—
Norwalk	1	—	1	½
Pirelli	—	—	38⅞	31¾
Raybestos-Manhattan	25½	20½	26	18⅝
Seiberling	5¼	4⅞	5¾	4¾
do. pfd.	—	—	40	33
U. S. Rubber	14¼	13¼	14⅞	11⅜
do. pfd.	27	25½	28½	20¾

D. M. Mason

D. M. Mason, former treasurer and general manager of the Mason Tire & Rubber Company, Kent, O., died February 7 in Stamford, Conn., at 44 years of age. Together with his brothers, O. M. and Dean Mason, he founded that company in 1915, but lost control in 1925 at which time he resigned as an officer and director. At the time of his death, Mr. Mason was president of the Standard Safety Razor Corporation, South Norwalk, Conn. He had also acted as general manager of the Pennsylvania Rubber Company for a year, immediately after leaving the Kent plant.

Mr. Mason was practically without funds when he came to Kent in 1915, but he managed to organize the tire company with an original capital stock of $250,000, made up largely of stock sold to the public. The company was one of the few to go through the 1920 depression without loss on forward commitments, and the war inflation period saw its capitalization raised to $10,000,000 with 10,000 stockholders. In 1921 its sales were $9,000,000, but by 1925 it was reporting losses and soon after D. M. and O. M. Mason left the organization, it went into receivership, trying unsuccessfully to reorganize until 1930 when the assets were liquidated.

Mr. Mason leaves three children, all of whom live in Connecticut. Dean Mason died two years after the tire factory opened, but O. M. Mason, the surviving brother, lives in Greenwich, Conn.

Chester M. Curry

Chester M. Curry, former tire fabric and textile merchant, died February 8 in Doctors Hospital, New York City, after a four months' illness of heart disease. He was 57 years old.

Mr. Curry was first connected with the firm of Curry & Horsford, founded by his father, the late James S. Curry. He later became associated with the firm of Brander & Curry, dealers in cotton goods and mill agents for fabrics for automobile tires. He retired from this firm in 1928, at which time it was reorganized as the J. A. Brander Company, Inc., under which name its business is still carried on at 250 West 57th Street, New York City.

Mr. Curry was well known as a yachtsman and clubman and at one time was associated with the late John T. Brush and Harry N. Hempstead in the management of the New York Giants baseball club. He is survived by his widow, a step-son and a brother.

Marvin J. Thomas

Marvin J. Thomas, master mechanic of the Xylos Rubber Company, Akron, O., died at his home, February 5, after a five-week illness. He was 47 years old and had been connected with the Firestone company for thirteen years.

The C. B. Webb Company, 200 Fifth Avenue, New York City, reports that sales during 1930 increased 25 per cent over any previous year in the firm's history. This company distributes the Weaver Health Ball and other rubber balls.

New Rubber Goods

Arco Automatic Tire Gauge

The case of the Arco automatic tire gauge is constructed of a hard aluminum alloy with a hard rubber coated pistol grip, thus making it sturdy despite its light weight of 26 ounces. The fittings are of brass, and simplicity of mechanical construction minimizes wear on moving parts. A large window of unbreakable glass covers the dial, all figures of which are white on black and remain in a readable position at all times. The rubber coated pistol grip fits the hand perfectly, allowing the index finger to fall naturally into position over the trigger. All air passages have been constructed as large as possible to reduce air resistance in passing through the gauge. The range is 20 to 100 pounds inclusive and the gauge is graduated every 2 pounds. The sale and distribution of this item have recently been taken over by the Kennedy Company, 1227 20th Avenue, Oakland, Cal.

Anoroc Insulated Cables

As a result of extensive research toward corona prevention and ozone elimination, the Simplex Wire & Cable Company, 201 Devonshire Street, Boston, Mass., has been able recently to introduce Anoroc rubber insulated cables. Anoroc rubber insulation, according to the manufacturer, controls voltage stress, prevents corona formation and eliminates ozone. It has a minimum rubber content of 40 per cent and a minimum tensile strength of 1,200 pounds to the square inch. It retains all the desirable physical, chemical and electrical characteristics of high grade rubber insulation, is elastic and does not become brittle when cold.

Stationer's Finger Cot

The Serugo Rubber Company, Inc., Cuyahoga Falls, O., is finding a wide market for

a new type of stationer's finger cot which it has recently introduced. Unlike the usual rubber finger cot for office work, this has a pebble finish that creates grit on paper and makes the counting of sheets or other similar work considerably easier than with the bare finger or the ordinary finger covering. The company also makes a line of surgeon's tissue cots and tan and black compound cots.

Champion Golf Ball

The Arlington Rubber Company, 26 Clayton Street, Dorchester, Mass., has just introduced the Champion golf ball to meet the need for a 50-cent ball with better than average quality. The inner core is only three-quarters of an inch in diameter, which allows a maximum amount of pure rubber

thread winding. This large amount of winding about a small center core gives better distance and greater lift. The cover stock is high grade balata, and the balls are packed attractively in three-ball cartons with four cartons to a handsome display container.

Gates Rubber Fender Flaps

All-rubber fender flaps to protect cars from flying sand, gravel and mud are now being manufactured by the Gates Rubber Company, Denver, Col. These flaps are

made in one piece of heavy, jet black rubber and of a quality to withstand the most severe usage. One size takes care of both front and rear fenders of all makes of cars. Fittings, requiring no bolt holes in fenders, are furnished, and attachment is easy.

Republic Golf Course Surface

The Republic Rubber Company, Youngstown, O., is offering earth coverings and floor coverings of rubber-backed pile fabric for use on miniature golf courses. This new material is being sold under the name of Velva-Turf.

Names in the News

HENRY G. LUBKE, head of the General Tire & Rubber Company export department, returned to Akron with Mrs. Lubke this month after an exciting business trip to Brazil. He was caught in Sao Paulo at the time of the recent revolution and was forced to pose as a revolutionist for safety.

P. J. KELLY, advertising manager of the B. F. Goodrich Company, is now making his annual trip to maintain contact with field sales and advertising officials of the company, his itinerary including St. Louis, Oklahoma City, Dallas and New Orleans. E. T. MORRIS, assistant to Mr. Kelly, is making a similar trip, visiting St. Louis, Des Moines, Omaha, Minneapolis, Fargo, Chicago, Davenport and Milwaukee, and GUY GUNDAKER, sales promotion manager, is visiting the south. W. E. SEWALL, advertising manager of the Hood tire division, has left on a similar mission on the Pacific coast.

C. S. CHING, director of industrial and public relations for the United States Rubber Company, addressed the Public Relations Conference of the American Management Association at Niagara Falls, N. Y., on February 4. The subject of his talk was "Public Relations Aspects of Personnel Management."

E. B. NEWTON, research chemist of the B. F. Goodrich Company, spoke on January 27 before the Mansfield Foremen's Club at the Mansfield Chamber of Commerce, Mansfield, O. He talked chiefly on an electrolytic deposition process used in manufacture of surgeon's gloves.

WILLIAM TEEUWEN, European district manager of the Firestone Tire & Rubber Export Company, has been visiting Akron this month, together with his daughter, Marie. Mr. Teeuwen, who makes his headquarters at Amsterdam, finds that the rest of the world is looking toward the United States for a spirit of optimism in the present depression.

C. W. LEGUILLON, manager of the machine development department of the B. F. Goodrich Company, addressed a group of the company's department managers and other officials at a meeting on February 5, describing the work of his department.

W. O'NEIL, president of the General Tire & Rubber Company, has now practically recovered from the effects of a broken ankle last December and a strained shoulder sustained in a second fall a month later.

PAUL R. MAHONEY, vice-president of the International B. F. Goodrich Company, has sailed on a world business tour that will take him first to Hawaii and Japan and then through Malaya, Northern Africa and Europe. He will return to Akron about July 1.

B. J. SIMMONS, former salesman for the Seiberling Rubber Company, has left Akron to become credit manager of the Northwestern Trust & Savings Company, Chicago, Ill. He was until recently acting in a similar position for the Ohio State Bank & Trust Company at Akron.

CARLTON W. BLOOM has been appointed a member of the sales department of Godfrey L. Cabot, Inc., Boston, Mass. Mr. Bloom has been for the past several years special

C. W. BLOOM

eastern representative of Brown & Bigelow, Minneapolis, Minn., and prior to that was associated with the Travelers Insurance Company, Hartford, Conn.

M. L. HEMINGWAY will retire on March 1 as managing director of the Motor and Equipment Association, in which capacity he has served the organization and its predecessor, the Motor and Accessory Manufacturers Association, for the past 12 years. Mr. Hemingway served as secretary of the War Service Committee of the Rubber Industry during the World War and since then has been active in trade association work.

F. E. TITUS, sales manager of the Pacific Goodrich Rubber Company, was the principal speaker at a special California night management meeting, held for 250 of the Goodrich Akron employes on January 22. He described the rise of the rubber factory industry at Los Angeles, explaining that coast plants now produce enough tires for local consumption and have developed an export trade to the Far East as well.

LEE SHOENHAIR, who has acted for two years as pilot of the Miss Silvertown plane of the B. F. Goodrich Company, has resigned that position. No announcement has as yet been made of the appointment of a successor.

F. L. KRAUSE, who has been connected with the United States Rubber Company for the past 14 years, has just been appointed manager of its tire service department, a reorganization of the company's former technical service division. Mr. Krause's first position with the company was as manager of its repair department in its branch at Syracuse, N. Y. Later he became an adjuster at this branch and served in this position up to December, 1926, when he was transferred to the general offices in Detroit.

P. W. LITCHFIELD, president of the Goodyear Tire & Rubber Company, was one of the principal speakers at the annual dinner meeting of the Toledo Chamber of Commerce, Toledo, O., on February 17. Mr. Litchfield is a director of the Chamber of Commerce of the United States from Ohio and is interested in business organization work.

A. E. WARNER, well known rubber chemist who has spent his entire career in rubber research work, has been appointed to the technical sales force of the C. P. Hall Company, Akron, O. A graduate of Buchtel College, now Akron University, Mr. Warner first joined the laboratory force of the B. F. Goodrich Company and was for many years the laboratory manager there. Later he installed the laboratories for the Miller Rubber Company and was for ten years chief chemist of that firm. The Firestone Tire & Rubber Company then claimed his services for another ten years until he left to join the C. P. Hall Company in his present capacity. His experience has embraced every type of research, development, practical application and actual manufacturing direction, including even a knowledge of the native peculiarities of crude rubber gained in a short time spent in the Far East.

J. B. BARR has been appointed to the sales staff of the Imperial Oil & Gas Products Company, Pittsburgh, Pa. Since his graduation from the Notre Dame School of Engineering six years ago, Mr. Barr has been employed in a technical capacity with direct contact to sales development, spending considerable time at the company's testing laboratories in Louisiana.

GEORGE N. WALKER, advertising manager of the tire department of the United States Rubber Company, has been appointed advertising manager of the Vacuum Oil Company, with headquarters at 61 Broadway, New York City.

JOSEPH W. THROPP, of the William R. Thropp Son's Company, and J. E. MYERS, of the Acme Rubber Manufacturing Company, were elected members of the executive committee of the Manufacturers' Council of the Trenton Chamber of Commerce last month.

Rubber News Around the World

RUBBER INDUSTRY BILL PASSES SECOND READING

The Rubber Industry Bill, which has made an annual appearance before the House of Commons for several sessions, was carried through its second reading on January 30 by 148 votes to 10. The bill, introduced by Mr. Bellamy, a Labor member, provides for a contribution by rubber manufacturers to the funds of the Research Association of British Rubber Manufacturers.

The bill calls for the collection of a sum not exceeding £15,000 per annum, which would be used for the continuance of the work of the research association. Owing to trade difficulties the voluntary subscriptions have fallen off, and this, with the gradual decrease of the government grant, has handicapped the research association.

The levy, which works out at a maximum of one twenty-fifth of a penny per pound of raw rubber, is in actual fact not expected to exceed one forty-fifth of a penny. The operation of the bill is limited to five years, before the expiration of which period the Department of Scientific Research must report to both Houses, so Parliament will have ample opportunity of deciding whether the work of the association justifies an extension of the levy.

An amendment is designed to insure strict secrecy in regard to the rubber consumption of individual manufacturers. It is reported that the administration was prepared to support the bill, though its prospects of proceeding through Parliament must depend upon the amount of time available and upon satisfactory agreement within the trade.

RUBBER INSTITUTION TO HEAR SEVERAL PAPERS

Members of the London and District Section of the Institution of the Rubber Industry will meet on March 2 at the Arts Theatre Club in London. This will be "Short Papers Night" and there will be brief technical discussions of a variety of interesting subjects.

The West of England Section will meet at Trowbridge on March 4 to hear a paper by B. D. Porritt, F.I.R.I., on "The Early Days of the Rubber Industry." On March 10 the Midland Section will hold a joint meeting with the Institution of Automobile Engineers at which there will be presented a paper by W. H. Tyson and a paper by C. R. F. Engelbach on "Tires from the Motor Manufacturer's Standpoint." This session will be held at the Grand Hotel, Birmingham.

Bergougnan Factory Sold

The old plant of the Bergougnan Rubber Company at Trenton, N. J., has been sold to Green Brothers, Springfield, Mass., for operation as a candy factory. The well known French rubber company manufactured tires there for several years.

Test Tires on Railroad

Experiments in the use of pneumatic tires on railways have just been carried out in France on the Issoudun-Saint Florent line by the Michelin Rubber Company, with officials of the Nord, Est and Orleans railroad systems present. The trials revealed that considerable advantage would result from the adoption of such tires on railway rolling stock. Gasoline railcars fitted with pneumatic tires have been in use for several months on secondary lines.

CHINA HAS MARKET FOR SOLES FROM OLD TIRES

Discarded automobile tires have long been made into shoes in certain European countries, and now an attempt is being made to market rubber soles manufactured from these old tires. In line with this new development the following report is made by the Mukden office of the Bureau of Foreign and Domestic Commerce:

Rubber soles manufactured from old automobile tires should find a considerable market in Manchuria, owing to the low price at which they could be sold. Most of the footwear now used by the poor classes has soles made of old rags and felt tightly sewn together. Undoubtedly, rubber soles made of old automobile tires would be more serviceable and would last longer than the material now used and possibly at a lower total cost.

The Mukden Government has a clothing division for manufacture of army clothes and shoes, and it is quite possible that this type of sole might be adopted by the army.

DEMONSTRATION TRIP FOR NEW NORWEGIAN TIRE

During the last few months nothing has been heard about the new tire invented by Colonel Anderson, but during the last few weeks the Oslo press has been full of reports which are rather optimistic regarding the trials made with the new tire. In reality, this invention is more a new wheel than a new tire. A large passenger car has been equipped with this wheel and is about to start on a demonstration trip throughout Europe.

It is mentioned also that a Swedish factory is to manufacture this new wheel and that the cost will not be more than 45 to 50 crowns each. A German-American financial syndicate is said to be interested in exploiting the invention, which will need considerable backing if it is to be placed on the market on a large scale.

Cleveland Welding Agent

The Cleveland Welding Company, Cleveland, O., manufacturer of automobile rims, will have all its export business with the exception of Canada handled in the future by W. D. Blood & Company, 30 Water Street, New York City.

PHILLIPS RUBBER SOLES NETS $512,000 IN 1930

Phillips Rubber Soles, Ltd., largest rubber sole manufacturer in Great Britain, has disclosed a net profit for the year of 1930 of £105,198, or about $512,000, as compared with net earnings in the year previous of £115,107, or approximately $561,000. The company's fiscal year ended November 30.

The directors, in view of the low price of rubber, propose placing £19,000 to a raw materials reserve, making a total of £35,000, and state that no further addition to this reserve need be anticipated, while amounts from it should ultimately become available for other purposes.

In addition, £5,000 is written off patents and designs, and the ordinary dividend is maintained at 15 per cent, leaving £14,957 to go forward to surplus as against £14,002 brought in last year.

W. W. Phillips is retiring from the board of directors on February 28, but will continue to act as general consultant. Charles E. Pettit will succeed Mr. Phillips as chairman.

DANISH RUBBER COMPANY EARNED $154,100 IN 1930

The Danish rubber goods factory, Schionning & Arve, of Copenhagen, which produces technical rubber goods as well as automotive and bicycle accessories, has had another favorable year. The company reports a net profit of 575,000 crowns ($154,100), a little below the returns for the preceding year amounting to 637,000 crowns ($170,700).

Out of this amount 150,000 crowns will again be distributed as a dividend of 6 per cent to the stockholders. The sum of 131,000 crowns will be used for ordinary amortization, 185,000 crowns will be placed with the reserves, 54,000 crowns will be distributed in bonuses, 25,000 crowns will be placed with the pension fund, while 30,000 crowns will be carried over to the new account.

BRITISH PASSENGER CARS PASS THE MILLION MARK

The number of licensed automobiles in the United Kingdom passed the million mark in 1930 for the first time. According to a return just issued by the Ministry of Transport, the number of cars taxed on horsepower in 1930 was 1,056,214, or 75,328 more than in 1929.

Motorcycles, on the other hand, showed a decrease, the figures being 724,319 for 1930, compared with 731,298 in 1929. Licensed trucks numbered 348,441, an increase of 18,647 over 1929. Taxicabs numbered 101,130, an increase of 3,133 over 1929. The total number of motor vehicles licensed in Britain last year was 2,230,104.

Current Crude Rubber Items

DEALERS' RUBBER STOCKS RISE IN THE FAR EAST

Dealers' stocks of crude rubber in the Far East amounted to 42,202 tons, dry weight basis, at the end of January, a cable to the Rubber Exchange of New York, Inc., reported. This compares with 39,610 tons held by dealers at the end of December, 1930, and with 34,712 tons at the close of January, last year.

Holdings of ribbed smoked sheets totaled 25,500 tons last month; crepe, 12,229 tons; unsmoked sheets, 3,562 tons, and scrap and lump rubber, 2,407 tons.

New Restriction Scheme

A new scheme for the restriction of rubber has been put forward by Sir George Maxwell, who, as chief secretary to the Federated Malay States government from 1920 to 1926, was largely responsible for the Stevenson scheme. Sir George suggests that just as in their districts the natives pay a special export tax in lieu of other taxation, so in lieu of restriction they should pay an additional export duty. The simplicity of the plan lies in the fact that the official staff and machinery that collects the present revenue duty could without difficulty collect the additional "restriction" duty.

Seeks Price Understanding

Director Bernhard of the Agricultural Department for the Netherlands East Indies is planning for the spring an understanding between rubber producers and rubber consumers concerning prices. According to Dutch officials, restriction of production in a degree sufficient to bring about an improvement in prices has proved impossible.

Self-Governed Town Planned At Ford Plantation Project

THE Ford Motor Company is inaugurating a new plan affecting the policy and method of local management of its rubber plantation at Boa Vista. "There is a determination on the part of the company to gradually evolve a plan by which the plantation, apart from that portion of it necessary to planting and operation, will become a self-maintained and self-governed municipality," said W. E. Carnegie, chief Ford accountant, who, with other Ford officials, arrived at Para on February 6.

Archibald Johnston of the Ford Engineering staff becomes manager of the company's office in Para. John Rogge, assistant in charge of operations at Boa Vista, assumes managerial duties on the plantation. J. S. Kennedy, present manager, will return to the United States.

Dual Management Advisable

"The adoption of a dual management has been deemed advisable," Mr. Carnegie said, because experience has shown that the distance between the plantation and the city of Para is too great to permit one manager to do justice to both ends of the job. Too much time is wasted in traveling between one point and the other. Furthermore, the supervision over ordering, buying, supplies, etc., now as in the past to be maintained at Para, can well occupy all of one manager's time. Hereafter Mr. Johnston will act in that capacity, while Mr. Rogge will be in charge of the field and plant operations on the plantation. It is believed that this arrangement will result in better co-ordination."

As quickly as details can be arranged the company will invite the people who reside adjacent to the property to assist in establishing a self maintained municipality within the plantation boundaries. It is the plan to have markets, stores, restaurants, churches, schools and places of amusement established there.

"Concessions will be granted," Mr. Carnegie continued, "though not on an exclusive basis, for additional necessities such as drug stores, laundries, bakeries, clothing stores—everything, in fact, that one usually finds contributing to the welfare and pleasure of a complete community unit.

"If the word 'gradual' is used in connection with the idea, such is not meant to imply that the company will attach strings of any kind to the plan. It merely means that there is appreciation of the fact that such a complete and wholly established town cannot spring into completeness in a day, nor a month, nor, perhaps, in a year. But a beginning is to be made right now.

To Select Town Site

"It is the company's purpose immediately to select a town site on the plantation, to lay out streets and designate the locations of the many buildings that will eventually line them. Steps will be taken at once to supply electricity, water and other facilities necessary to the project.

"In due time and as the plan progresses it is to be supposed that a municipal charter will be obtainable. After that step has been taken the town will elect its own Mayor, maintain its own fire department and police force and levy and collect its own taxes. In other words, it will manage its own affairs as a strictly independent community."

Closing Prices on Rubber Exchange of New York, Inc.

FROM FEBRUARY 4 TO FEBRUARY 17, 1931

		Spot	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan	Sales
No. 1 Standard Contract of 10 Tons															
Feb.	4	7.70	7.55	7.78	7.87	7.95	8.04	8.12	8.22	8.31	8.41	8.51	8.60	8.71	53
	5	7.50	7.45	7.64	7.72	7.80	7.90	8.00	8.09	8.17	8.28	8.38	8.49	8.60	66
	6	7.55	7.50	7.66	7.74	7.81	7.91	8.00	8.10	8.19	8.34	8.46	8.58	8.68	16
	7	7.70	7.45	7.68	7.77	7.87	7.96	8.05	8.14	8.23	8.35	8.47	8.59	8.70	16
	9	7.75	7.55	7.76	7.86	7.96	8.05	8.15	8.25	8.35	8.47	8.59	8.70	8.82	46
	10	8.00	7.95	8.07	8.16	8.25	8.35	8.45	8.54	8.63	8.75	8.87	8.99	9.11	171
	11	7.95	7.85	7.96	8.05	8.15	8.25	8.35	8.45	8.55	8.67	8.79	8.90	9.02	58
	13	7.80	7.75	7.75	7.90	8.05	8.13	8.20	8.30	8.40	8.54	8.70	8.80	8.90	32
	14	7.63	7.55	7.55	7.77	7.80	7.88	7.97	8.08	8.20	8.32	8.43	8.55	8.66	24
	16	7.62	7.55	7.59	7.70	7.77	7.87	7.97	8.08	8.19	8.31	8.42	8.52	8.64	65
	17	7.62	7.55	7.60	7.69	7.79	7.88	7.97	8.08	8.19	8.31	8.43	8.55	8.65	89
Old "A" Contract of 2½ Tons															
Feb.	4	——	7.50	7.70	7.70	7.80	7.90	8.00	8.00	8.10	8.30	8.40	8.50	8.65*	64
	5	——	7.30	7.50	7.50	7.70	7.80	7.90	7.90	8.00	8.20	8.30	8.40	8.55*	115
	6	——	7.50	7.50	7.60	7.70	7.80	7.90	8.00	8.10	8.30	8.40	8.50	8.65*	29
	7	——	7.50	7.60	7.70	7.80	7.80	7.90	8.00	8.10	8.30	8.40	8.50	8.65*	24
	9	——	7.50	7.70	7.80	7.90	8.00	8.10	8.20	8.30	8.40	8.50	8.60	8.75*	38
	10	——	7.90	8.00	8.00	8.10	8.20	8.30	8.40	8.50	8.70	8.80	8.90	9.05*	141
	11	——	7.80	7.90	8.00	8.10	8.20	8.20	8.30	8.40	8.60	8.70	8.80	8.95*	48
	13	——	7.70	7.80	7.90	8.00	8.10	8.20	8.20	8.30	8.50	8.60	8.70	8.85*	59
	14	——	7.50	7.50	7.60	7.70	7.80	7.90	8.00	8.10	8.20	8.30	8.40	8.55*	80
	16	——	7.40	7.50	7.60	7.70	7.80	7.80	8.00	8.10	8.20	8.30	8.40	8.55*	122
	17	——	7.40	7.50	7.60	7.70	7.80	7.90	8.00	8.10	8.20	8.30	8.40	8.55*	49

*New "A" Contract.

Finds Producers Curtailing Until Better Prices Rule

The rubber markets are reflecting disappointment over the vacillating policy of producers as regards restrictive measures, says W. S. Hammesfahr of George H. McFadden & Bro., in a review of the crude rubber situation. "It seems now, however," concludes Mr. Hammesfahr, "that producers are beginning to see the light, and we are informed from reliable sources that the price decline the last few weeks has now convinced them that drastic curtailment in their production is absolutely essential and that they will adhere to the restrictive program over an extended period of time even if a rise in the value of rubber should take place."

UNIVERSITY OF MICHIGAN HAS CHEMICAL COURSES

The University of Michigan, Ann Arbor, Mich, is offering many important courses in chemical engineering in its 1931 curriculum. This university has unusual facilities for advanced laboratory work, and its department of engineering research has important contacts with the chemical industry and several industrial fellowships will be available for graduate students next year.

"The technology of rubber," says Alfred H. White, professor of chemical engineering, "is treated directly in certain courses, such as that on 'Chemical Technology of the Organic Industries,' and opportunity is offered in advanced courses for some further specialization. We do not, however, believe in giving undergraduate students sharply specialized training in any specific field. It is our experience that they succeed better with a broad fundamental training in chemical engineering and with specialization reserved for graduate work."

Copies of the latest bulletin announcing courses may be secured by writing to the chemical engineering department of the university.

UNITED CARBON TO SELL OUTPUT OF NATURAL GAS

The United Carbon Company, producer of carbon blacks, has signed a long-term contract with the Warfield Natural Gas Company, a subsidiary of the Columbia Gas & Electric Corporation, whereby Warfield will purchase all the natural gas to be produced from the lands and leases held by United Carbon in eastern Kentucky. The properties total 83,629 acres and contain reserves estimated by engineers at 403 billion cubic feet of gas.

The contract provides for the delivery of a stated minimum amount for the year beginning November, 1931, and a larger quantity in succeeding years. Officials of the United Carbon Company state that the transaction involves greater acreage and larger ultimate deliveries of gas than any of the type ever made in the Appalachian gas fields, and they regard it as the most important of their contracts to supply public utility companies.

EDWARD M. MARTIN has arrived in France to assume his duties as secretary-treasurer of the Societe Francaise B. F. Goodrich. Mr. Martin, who has been with the Goodrich organization since 1920, was for the past two years eastern district credit manager and prior to that was with the Atlanta division. His headquarters are now at 221 Boulevard de Valmy, Colombes.

Omo Names Selling Agent

The Omo Manufacturing Company, Middletown, Conn., has appointed the Poirier & Lindeman Company, 373 Fourth avenue, New York City, as selling agents to the department store trade. They will handle the Omo line of dress shields, baby pants, bibs, crib sheets, rubber sheeting, bathing caps and other rubber specialties.

F. A. SEIBERLING URGES SHERMAN LAW REVISION

Scoring the Sherman and Clayton anti-trust laws as obstructions to cooperation between industries that might level out the peaks and depths of business trends, Frank A. Seiberling, president of the Seiberling Rubber Company, declared in interviews at New Orleans, La., last month that the government must eventually recognize this necessity and take steps to permit it.

"We must finally recognize that competitors can meet and discuss industrial markets, probable demands and stock inventories without the question of prices or price-fixing entering into the discussion," Mr. Seiberling said. "The time must come when this or some similar means is found of stabilizing industry to prevent the periodic booms and depressions with the resulting overproduction and unemployment.

"The automobile industry has gone far toward this end in the decision to attempt a leveling out of these business curves with new model announcements in November and December, thus giving the business an impetus when it is ordinarily dormant or nearly so. One major manufacturer, of course, prevents full effectiveness of this through refusal to co-operate with the others.

"This co-operation must apply to agriculture as well as industry because of the need for stabilizing that branch of our national activity."

Mr. Seiberling was in New Orleans at the end of January to discuss his company's plans before Seiberling dealers for Louisiana, Mississippi, Texas and Alabama.

JOHN A. MACMILLAN, president of the Dayton Rubber Manufacturing Company, Dayton, O., has accepted the chairmanship of the newly-organized Property Owners' Division of the Dayton Real Estate Board.

C. C. STUBER, of the Goodyear Tire & Rubber Company, will speak on "The Handling of Trucks and Skids" at the Management, Maintenance and Materials Handling Congress to be held April 13 to 18 at Cleveland, O. CHARLES W. STAACHE, of the B. F. Goodrich Company, will also speak on "The Use of Rubber Products for Materials Handling."

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LATE MARKET PRICES

RUBBER—COTTONS AND FABRICS—CHEMICALS

NEW YORK, FEBRUARY 17, 1931

RUBBER

Crude

CRUDE rubber prices have varied only slightly during the fortnight, and it now appears likely that the average of the daily closing prices for the present month will set a new low record in the history of the industry. Even the previous low of 8.20 cents a pound established last October may be appreciably lowered inasmuch as the closing quotation for the commodity has touched 8 cents on only one day thus far in February.

There have been no significant new developments in the period, but the mere official recording of what was already generally accepted as fact has been sufficient to bear the market down. The huge visible supplies continue to overshadow the market, while the increase in consumption has not been up to expectations. Late news, such as the anouncements that Goodyear is now producing 250,000 tires a week and that Dayton is jumping its tire output 100 per cent, may serve to stimulate the market slightly.

Prices quoted on the New York outside market at the close on February 17 were as follows:

Plantations—

Ribbed Smoked Sheets—			
Spot-Feb.	.07¾@	.07¾
Mar.	.07½@	.07¾
Apr.-June	.07¾@	.08
First Latex, crepe spot	.07⅝@	.07⅞
Amber Crepe, No. 2	.07⅝@	.07⅝
Amber Crepe, No. 3	.07¼@	.07½
Amber Crepe, No. 4	.07¼@	.07⅜
Brown Crepe, Clean thin	.07¼@	.07⅜
Brown Crepe, specky	.06⅞@	.07⅛
Liquid Latex, per gal.	.75 @	.85

Paras—

Up-river, fine	.09¾@	—
Up-river Medium	Nominal	
Up-river Coarse	.07 @	.08
Acre Bolivian, fine	.10 @	—
Caucho Ball, Upper	.07 @	.08
Islands, fine	Nominal	

Centrals—

Central, scrap	.06 @	.07
Esmeraldas	.06 @	.07

Balata—

Block, Colombia	Nominal	
Block, Ciudad	.31 @	.31½

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers		
Spot-Feb.	@	3 7/16d
Mar.	@	3 7/16d
Apr-June	@	4 d

SINGAPORE MARKET

(Holiday)

Scrap

Little activity has marked the scrap rubber market during the present month, although the demand is slightly stronger than it was at the end of the past year. The present course of the industry in general is too indefinite for reclaimers to make any effort to increase their stocks. Late prices for scrap rubber were as follows:

(Prices to Consumer)

Auto tire peelings	ton	21.50	@23.00
Mixed auto	ton	12.00	@12.50
Bicycle tires	ton	9.00	@10.00
Clean solid truck tires	ton	24.50	@26.00
Boots and shoes	cwt.	1.10	@ 1.30
Arctics, untrimmed	cwt.	.90	@ 1.00
Inner tubes, No. 1	lb.	.04⅝@	.04⅞
Inner tubes, No. 2, compounded	lb.	.02⅛@	.02¼
Inner Tubes, Red	lb.	.02	@ .02⅛
Air Brake Hose	ton	10.00	@12.00
Rubber Hose	ton	9.00	@10.00

Reclaimed

With crude rubber consumption during January at the lowest level for that month since 1922, the use of reclaimed rubber was naturally not on a high scale. Stocks of reclaim, however, are not so high as during past months, and suppliers are looking for some improvement in their business. The latest prices for the various grades of reclaim were as follows:

High Tensile			
Super-Reclaim Black	lb.	.08½@	.08¾
High Tensile Red	lb.	.08¼@	.08½
Shoe			
Unwashed	lb.	.06 @	.06¼
Washed	lb.	.08 @	.08¼
Tube			
No. 1 (Floating)	lb.	.08½@	.08¾
No. 2 (Compounded)	lb.	.07½@	.07¾
Tires			
Black	lb.	.05¾@	.06
Black, selected tires	lb.	.06 @	.06½
Dark Gray	lb.	.07 @	.07½
Light Gray	lb.	.07¾@	.08
White	lb.	.08¾@	.09
Truck, Heavy Gravity	lb.	.06 @	.06¼
Truck, Light Gravity	lb.	.06¼@	.06½
Miscellaneous			
Mechanical blends	lb.	.05 @	.05½

COTTON and FABRICS

Cotton

BETTER buying from all sides and some encouraging statistical information have put cotton up more than 40 points during the fortnight. The closing spot price quotation for middling uplands on the New York market was 11.05 cents a pound on February 17 as against 10.65 cents on February 4.

The market was braced to some extent by the outlook for a smaller Indian crop. The Indian government put it on February 17 at 4,836,000 bales of 400 pounds each, against 5,260,000 last year, a decrease this year of some 425,000 bales. The Indian acreage was stated at 23,531,000, against 26,692,000 last year, a decrease this year of 2,161,000 acres. The Brazilian crop has been reduced 165,000 bales.

The high, low and closing prices for the commodity on the New York Cotton Exchange on February 17 were as follows:

	High	Low	Close	Close
		Feb. 17		Feb. 4
Mar.	10.99	10.93	10.97	10.55
May	11.27	11.20	11.24	10.82
July	11.51	11.45	11.49	11.06

Tire Fabrics

Domestic tire factories used 198,515,577 pounds of cotton fabric in the manufacture of casings, tubes and solid and cushion tires in 1930, comparing with the use of 261,030,816 pounds during 1929. Late prices for the various grades were as follows:

CORD			
Peeler, carded, 23/4/3	lb.	.34½@	.34¾
Peeler, carded, 23/5/3	lb.	.33 @	.33¼
Peeler, carded, 18/3/3	lb.	.30½@	.30¾
Peeler, carded, 15/3/3	lb.	.31 @	.31¼
Egyptian, carded, 23/5/3	lb.	.43 @	.43½
Egyptian, combed, 23/5/3	lb.	.47 @	.47½
CHAFERS			
Carded, American, 8 oz.	lb.	.26½@	.27
Carded, American, 10 oz.	lb.	.26 @	.26½
Carded, American, 12 oz.	lb.	.25½@	.26¼
Carded, American, 14 oz.	lb.	.25 @	.26
LENO BREAKER			
Carded, American, 8¼ oz.	lb.	.26 @	.32
Carded, American, 10¼ oz.	lb.	.26 @	.32
SQUARE WOVEN			
Carded, American, 17¼ oz. 23-11 ply	lb.	.33 @	.33½
Carded, American, 17¼ oz. 10-ply	lb.	.25 @	.25½

Sheetings

The market for sheetings was even slightly weaker at the end of the fortnight than it has been in past months when the price of raw cotton was lower. The latest quotations, as reported by the Textile Brokers Association, follow:

40-inch, 2.50-yard	yd.	0.7¾@	.07⅝
40-inch, 2.85-yard	yd.	.06⅝@	.06½
40-inch, 3.15-yard	yd.	— @	.07⅛
40-inch, 3.60-yard	yd.	— @	.06½
40-inch, 3.75-yard	yd.	.05¼@	.05¼
40-inch, 4.25-yard	yd.	— @	.04¾

Ducks

Hose and belting ducks were again fractionally lower during the fortnight, but the other grades remained firm in price. The market continued to be quiet with quotations for the various grades closing as follows:

Belting and Hose	lb.	— @	.23½
Enameling	lb.	.22 @	.24
Single filling	lb.	.10½@	.11¼
Double filling	lb.	.12 @	.13

CHEMICALS

PRICE quotations for the majority of rubber chemicals and compounding ingredients remained firm at the end of the fortnight, with little change except for a somewhat improved demand for carbon black, the rubber industry being more active as a buyer on contract and the paint industry also showing better interest. Authorities in the trade recently estimated world supplies of carbon black at approximately 250,000,000 pounds, or double the quantity on hand one year ago at this time.

ACCELERATORS

Organic			
A-1	lb.	.24 @	.27
A-5-10	lb.	.33 @	.36
A-7	lb.	.55 @	.59
A-11	lb.	.62 @	.66
A-16	lb.	.57 @	.61
A-19	lb.	.58 @	.62
A-20	lb.	.64 @	.68
A-32	lb.	.80 @	.95
Aldehyde ammonia, crystals	lb.	.65 @	.70
Aniline oil, drums, f.o.b. works	lb.	.15 @	.16
Captax	lb		
Crylene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.42 @	.44½
Diphenylguanidine	lb.	.30 @	.32½
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde aniline	lb.	.37½@	.40
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.58½@	.61
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.37½@	.40
Monex	lb.	3.25 @	--
Oxynone	lb.	.68 @	.80
Phenex	lb.	.75 @	—
Pipsol	lb.	4.30 @	4.50
R & H 40	lb.	.40 @	.42½
R & H 50	lb.	.40 @	.42½
R & H 397	lb.	.75 @	.77½
R-2	lb.	1.95 @	2.15
Safex	lb.	1.20 @	1.25
SPDX	lb.	.75 @	—
Super-Sulphur No. 1	lb.		
No. 2	lb.		
Tensilac, No. 39	lb.	.40 @	.42½
Tensilac, No. 41	lb.	.50 @	.52½
Thermic F	lb.	.50 @	.55
Thiocarbanilid, drums	lb.	.25½@	.28½
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.62½
Tuads	lb.		
Ureka	lb.	.75 @	1.00
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Z-88-P	lb.	.50 @	.60
Zimate	lb.		
Inorganic			
Lead, sublimed blue	lb.	.08¼@	—
Lead, white	lb.	.08½@	.08¾
Litharge, domestic	lb.	.07¾@	—
Magnesia, calcined, light	per 100 lb.	5.35 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)			
Blues			
Prussian	lb.	.35 @	.36
Ultramarine	lb.	.06 @	.32
Browns			
Sienna, Italian	lb.	.05½@	.12½
Umber, Turkey	lb.	.04½@	.07
Greens			
Chrome, light	lb.	.30 @	.32
medium	lb.	.31 @	.33
dark	lb.	.34 @	.36
Chromium Oxide, bbl.	lb.	.34½@	.35½
Reds			
Antimony crimson, 15/17	lb.	.40 @	.44
sulfur, free	lb.	.56 @	.66
golden, 15/17 F.S.	lb.	.20 @	.25
Indian English	lb.	.08 @	.11
Domestic (Maroon)	lb.	.11 @	—
Oximony	lb.	.13¼@	—
Red oxide, pure	lb.	.10 @	.12
Smith's 444 Crimson f.o.b. Springfield	lb.	.08¾@	.10
Rub-Er-Red, f.o.b.Easton	lb.	.08¾@	—
Venetian red	lb.	.08 @	.06
Vermillion, quicksilver, English	lb.	1.75 @	1.80
Whites			
Lithopone, Akeolith	lb.	.05 3/5@	.06
Lithopone, Albalith	lb.	.05¼@	.05¾
Lithopone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.05¾@	—
Titanium oxide	lb.	.21 @	—
Titanox B, f.o.b. St. Louis,	lb.	.06½@	.07
Titanox C, f.o.b. St. Louis,	lb.	.07 @	.07½
Zinc Oxide—American Process			
American Azo:			
ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅝@	.06⅞
Horsehead Brand:			
Special	lb.	.07 @	.07½
XX Green	lb.	.07 @	.07½
XX Red, lead free	lb.	.06½@	.07
Kadox, black label	lb.	.10⅜@	.10⅞
blue label	lb.	.09⅜@	.09⅞
red label	lb.	.08 @	.08⅛
St. Joe, black label	lb.	.06½@	.07
red label	lb.	.06½@	.07
Zinc Oxide—French Process			
Anaconda, lead free	lb.	.06½@	.07
Anaconda, selected lead free	lb.	.07 @	.07½
White seal	lb.	.11⅝@	.11⅞
Green seal	lb.	.10⅜@	.10⅞
Red seal	lb.	.09⅜@	.09⅞
Yellows			
Chrome	lb.	.16½@	.17
Ocher, French medium	lb.	.02 @	.03
domestic	lb.	.01¾@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate, lump	lb.	.07½@	.07¾
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.03½@	.05
Barium Dust	lb.	.05 @	.06
Barytes southern off-color	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—
Bentonite	lb.	.02 @	.03
Blacks			
Arrow "Aerfloted"	lb.	.04 @	.09
Bone Black	lb.	.06 @	.12½
Carbon, compressed	lb.	.03½@	.07½
Carbon, uncompressed	lb.	.03½@	.07½
Disperso, f.o.b. Louisiana	lb.	.03½@	—
Disperso, f.o.b. Texas	lb.	.036 @	—
Drop Black	lb.	.06 @	.14
Fumonex	lb.	.03½@	.07½
Excello, compressed	lb.	.04 @	.08
Gastex, f.o.b. Texas	lb.	.03 @	.06
Lamp Black	lb.	.10 @	.40
Micronex	lb.	.04 @	.09
Thermatomic-Thermax	lb.		
Flex	lb.		
P-33	lb.		
United carbon, fob Tex.	lb.	.04 @	.09
Velvetex carbon	lb.	.03 @	.06
Blanc fixe dry f.o.b. works	ton	75.00 @	90.00
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Clay, Kaolin, domestic	ton	8.00 @	9.00
Aerfloted, Suprex	ton	8.00 @	20.00
Colloidal	lb.	.05 @	.08
Congaree c. l. f.o.b. mine	ton	9.00 @	—
Dark Blue Ridge	ton		
Dixie	ton		
Langford	ton		
Lexington	ton	10.00 @	22.00
Mineral Flour, c.l. f.o.b. mine	ton	20.00 @	23.00
Par	ton		
Tensulite		15.00 @	—
Glues, extra white	lb.	.25 @	.26
medium white	lb.	.22 @	.24
Magnesia, carbonate	lb.	.08¾@	.11
Mica, white water grnd.	lb.	.06 @	.08
Off color (biotite)	lb.	.05 @	.07
Rotten Stone (powdered)	lb.	.02 @	.05
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.42 @	3.52
Talc, domestic	ton	12.00 @	15.00
Pyrax A	ton		
Whiting, commercial	cwt.	— @	1.00
English cliffstone	cwt.	1.75 @	2.00
Quaker	ton		
Superfine	ton	10.00 @	12.00
Sussex	ton		
Witco	ton	20.00 @	—
Zinc Carbonate	lb.	.09½@	.10½
Zinc Stearate	lb.	.20 @	.23

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Granulated M. R.	ton		
Hard Hydrocarbon	ton		
Paradura	ton	62.50 @	65.00
Parmr, solid	ton	28.00 @	48.00
Pioneer, MR, sclid	ton	40.00 @	42.00
Pioneer-granulated	ton	50.00 @	52.00
R & H Hydro-Carbon	ton	27.05 @	29.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	38.00 @	80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulfuric, 66 degrees	cwt.	1.60 @	1.95
Tartaric, crystals	lb.	— @	.31½
Acids, Fatty			
Laurex	lb.	.15 @	.16
Stearex	lb.	.13 @	.17
Stearic, double pressed	lb.	.17 @	.22
Alkalies			
Caustic soda, 76%	cwt.	2.90 @	—
Soda ash, 58% C.L.	cwt.	1.17½@	—
Oils			
Corn, refined, bbls.	lb.	.08¾@	.10½
Cottonseed, crude		.06⅛@	.07
Cycline	gal.	.27 @	.34
Degras (c.l. 100 bbls.)	lb.	.03¾@	—
Less c.l. (10-25 bbls.)	lb.	.04 @	—
Lots less than 10 bbls.	lb.	.04¼@	.04½
Fluxrite	lb.	.05½@	.06½
Palm Lagos	lb.	.05½@	.06
Niger	lb.	.04¾@	.05¼
Para-Flux	gal.	.17 @	—
Petrolatum, white	lb.	.08 @	.08½
Pigmentaroil	gal.	.18 @	.23
Pine, steam distilled	gal.	.65 @	.70
destructively distilled	gal.	.54 @	.55
Witco Palm Oil	lb.	.11 @	—
Witco Softener (f.o.b. wks.)	lb.	.02 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	7.00 @	—
Rosin, grade K, 280 lb.	bbl.	— @	5.85
Pigmentar	gal.	.18 @	.23
Tar Retort, 50 gal.	bbl.	13.50 @	15.00
Solvents			
Acetone, pure	lb.	.10 @	.10½
Alcohol, denatured, No. 1 bbls.	gal.	.40 @	.47
Benzol, 90%	gal.	.21 @	.23
Carbon, bisulphide	lb.	.05½@	.06¼
Carbon, tetrachloride	lb.	.06¼@	.07
Dryolene (f.o.b. Okla.)	gal.	.10 @	.10½
Gasoline, steel bbls.	gal.	.16 @	—
Naphtha, solvent	gal.	.30 @	.38
Rub-Sol (f.o.b. Okla.)	gal.	.09 @	—
Turpentine, spirits	gal.	.43¼@	.43½
wood	gal.	.37 @	.39
destructively distilled	gal.	.35 @	—
Waxes			
Beeswax, white	lb.	.34 @	.36
Carnauba	lb.	.26 @	.28
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.06½@	.07
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Paraffin (c.l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.02½@	—
White crude scale 124/126	lb.	.02½@	—
Refined, 125/127	lb.	.03⅝@	—
Refined, 128/130	lb.	.03¾@	—
Refined, 135/137	lb.	.05¼@	—
Refined, 138/140	lb.	.07¼@	—

ANTI-OXIDANTS

Agerite, Resin	lb.		
Powder	lb.		
White	lb.		
Albasan	lb.	.70 @	.75
Antox	lb.		
B-L-E	lb.	.57 @	.60
Neozone	lb.		
Oxynone	lb.	.68 @	.80
Resistox	lb.	.54 @	.57
Stabilite	lb.	.57 @	.62
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.55 @	.66

SPECIALTIES

Sunproof	lb.	.35 @	.37½
Sponge Paste	lb.	— @	.30
Tonox	lb.	.56 @	.60

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.08 @	.15

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03½@	.04½
Sulfur flour, Ref'n'd, 100% pure (bags)	cwt.	2.40 @	2.75
Commercial (bags	cwt.	1.75 @	2.10
Vandex	lb.		

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

DURING the year of 1930, domestic tire factories shipped approximately 53,600,000 pneumatic casings to dealers and consumers. This total was roughly divided into 37,100,000 casings for replacement sales, 14,000,000 casings for original equipment, and 2,500,000 casings for export to other countries. The 1929 shipments of 69,400,000 units were made up of 44,500,000 for replacements, 22,000,000 for original equipment, and 2,800,000 for export.

At the present time, American tire companies can hardly hope that 1931 shipments will exceed 60,000,000 casings, if, indeed, they should reach that figure. On that basis, the division would probably be about 41,100,000 for replacement, 16,500,000 for original equipment, and 2,400,000 for export.

American and British crude rubber stocks mounted to new high records during the fortnight, while domestic consumption in January was the lowest for that month in nine years.

Latest figures covering imports and exports from the leading producing and consuming countries have been added to the appropriate tables in this section.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available.

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U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Total Declared Value	Average Declared Value per pound Cents	Re-exports: Long Tons	Total Declared Value	Average Declared Value per pound Cents	Net Imports: Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	25.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,733	20.64	523,599
1930	482,082	139,134,330	12.89				
1928:							
Jan.	39,107	30,278,444	34.56	1,988	1,734,990	38.95	37,119
Feb.	33,663	27,763,655	36.82	2,738	2,229,589	36.35	30,925
Mar.	40,611	32,103,042	35.29	3,718	2,587,435	31.07	36,893
Apr.	37,935	27,287,266	32.11	2,272	1,415,024	27.80	35,663
May	31,059	19,058,672	27.39	2,399	1,386,307	25.80	28,660
June	27,765	14,121,219	22.71	2,621	1,400,697	23.86	25,144
July	31,258	14,144,765	20.20	3,087	1,451,446	20.99	28,171
Aug.	31,204	12,860,150	18.39	2,377	1,084,646	20.37	28,827
Sept.	39,835	16,512,019	18.50	3,038	1,384,148	20.34	36,797
Oct.	44,058	18,200,332	18.44	2,405	1,085,407	20.15	41,653
Nov.	36,519	14,878,441	18.19	2,788	1,207,089	18.52	33,731
Dec.	43,511	17,580,966	18.04	2,738	1,165,743	19.00	40,773
1929:							
Jan.	57,564	22,872,943	17.74	3,663	1,773,401	21.61	53,901
Feb.	64,265	24,760,111	17.20	2,955	1,374,783	20.77	61,310
Mar.	50,604	20,380,905	17.98	4,218	2,094,037	22.16	46,386
Apr.	55,725	25,542,726	20.46	3,293	1,624,237	22.02	52,432
May	51,161	24,855,511	21.25	2,836	1,349,690	21.24	48,325
June	41,663	18,799,307	20.14	3,152	1,470,746	20.83	38,511
July	43,944	19,342,147	19.65	3,424	1,590,411	20.73	40,520
Aug.	37,222	16,530,090	19.83	2,644	1,232,217	20.80	34,578
Sept.	34,472	15,214,485	19.70	2,011	861,068	19.11	32,461
Oct.	38,163	16,192,261	18.94	2,614	1,190,510	20.33	35,549
Nov.	43,507	18,189,305	18.66	2,929	1,300,354	19.82	40,578
Dec.	42,952	17,573,330	18.27	2,745	1,007,279	16.38	40,207
1930:							
Jan.	47,496	17,793,563	16.72	3,144	1,077,415	15.30	44,352
Feb.	42,687	14,798,240	15.48	2,280	960,790	18.80	40,407
Mar.	44,976	14,653,243	14.54	3,187	1,192,708	16.71	41,789
Apr.	45,423	14,783,605	14.53	2,688	892,532	14.82	42,735
May	42,692	13,373,232	13.98	3,154	1,085,432	15.37	39,538
June	39,993	12,215,848	13.79	3,125	1,027,136	14.67	36,868
July	35,182	10,553,944	13.39	2,732	736,863	12.04	32,450
Aug.	35,713	9,666,362	12.08	2,194	646,667	13.16	33,519
Sept.	35,380	8,460,812	10.68	1,509	429,789	12.72	33,871
Oct.	46,069	9,893,980	9.59	2,054	348,331	7.57	44,015
Nov.	29,401	5,700,086	8.66	1,296	271,847	9.37	28,105
Dec.	37,300	7,175,242	8.59	2,168	542,197	11.17	35,132

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1924	1925	1926	1927	1928	1929	1930	1931
Jan.	29,058	29,638	32,196	31,518	34,403	43,002	35,872	28,557
Feb.	25,736	29,761	31,136	30,137	33,702	41,594	32,014	.....
Mar.	28,385	33,498	32,936	36,141	35,688	44,730	35,134	.....
Apr.	27,129	34,139	32,696	35,871	32,772	47,521	39,333	.....
May	25,845	35,322	29,364	34,592	37,333	49,233	39,035	.....
June	22,753	35,822	28,598	33,801	37,676	43,227	33,890	.....
July	23,396	36,053	27,577	29,219	37,407	41,526	29,245	.....
Aug.	28,982	35,909	34,533	33,460	42,927	38,274	30,575	.....
Sept.	31,497	31,691	32,904	27,214	39,882	34,707	25,288	.....
Oct.	31,520	29,047	29,836	26,790	40,857	34,800	27,271	.....
Nov.	27,289	28,253	28,080	26,792	37,461	27,659	23,479	.....
Dec.	27,199	28,748	26,293	25,492	31,232	23,531	21,493	.....
Totals	328,769	388,481	366,149	371,027	441,340	469,804	372,628	

Figures on Quarterly Basis

Quarter	1923	1924	1925	1926	1927	1928	1929	1930
Jan./Mar.	96,776	87,609	95,263	94,301	99,216	103,558	128,565	101,616
Apr./June	89,493	75,674	104,099	97,109	103,242	103,500	139,292	112,092
July/Sept.	55,621	83,813	99,493	93,793	89,210	117,573	113,746	85,261
Oct./Dec.	63,617	92,656	85,789	83,212	80,860	117,597	84,872	
Totals	305,507	339,752	384,644	358,415	372,528	442,227	466,475	

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1929	1930	MONTHS	1929	1930
January	22,602,000	25,731,000	July	36,860,000	38,256,000
February	22,776,000	26,509,000	August	37,759,000	37,433,000
March	28,495,000	31,029,000	September	34,193,000	37,823,000
April	32,019,000	34,549,000	October	32,816,000	32,267,000
May	34,117,000	36,497,000	November	31,502,000	30,984,000
June	33,163,000	35,902,000	December	26,550,000	29,094,000

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave
1928																																
October	18⅝	18¼	18¼	18⅛	18⅝	18⅝	—	18⅝	18⅝	18⅝	19	—	—	—	19⅛	19	19	19	19	—	20⅝	20⅝	21⅜	22⅝	22	22	—	22⅛	21¾	21¾	22¼	20⅛
November	18¾	18⅝	18⅝	—	18⅞	—	18⅞	18⅝	18⅝	18⅝	—	18¼	18¼	18	17⅞	17⅞	17⅞	—	18	18⅞	18⅛	18	—	18	26⅛	26⅛	26½	23	—	—	—	24
December	17¾	—	17¾	17¾	17¾	18⅛	18	—	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17⅞	17⅞	17⅞	17⅞	18⅛	18⅛	18⅛	18
1929																																
January	—	18⅛	18⅛	18⅛	18⅛	—	18⅛	18⅛	18⅝	18⅝	20	20	—	20	—	19⅛	20⅜	20¼	20¼	—	20⅝	20⅞	21⅜	22⅝	22	22	—	—	22⅛	21¾	22¼	20⅛
February	22⅝	22	—	21⅞	22¼	22¼	22⅛	22¼	22¼	—	25⅝	25⅝	25⅝	23	23	25⅝	25⅝	25½	25½	25	25⅝	23½	—	—	26½	26⅞	22⅛	23	—	—	—	24
March	26	26	—	26	26	25⅝	25⅛	25½	25½	—	25⅝	25⅝	25⅝	24⅝	24⅝	24⅝	24⅝	24⅝	24⅝	23	23	—	—	23½	21¾	22½	22⅝	—	—	—	—	24½
April	23	23⅛	—	22¼	22⅝	22½	—	22⅝	23½	22⅝	22⅝	21⅝	—	22½	21½	21¾	22⅝	22⅝	21	23½	22⅝	22⅝	22⅝	19⅝	19⅝	19⅝	19⅝	19⅝	19⅝	—	—	21⅛
May	19⅞	19⅝	19⅝	19⅝	19⅝	—	20¼	20⅞	21⅝	21	21	21	—	20⅝	22⅝	23⅝	23⅝	23⅝	22⅝	22⅝	22⅝	22⅝	22⅝	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21½
June	21⅛	21⅜	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	20⅝
July	20⅝	21¼	21	—	—	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼	21¼
Aug.	21⅝	21	21	—	—	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20⅝
Sept.	—	21	21	20⅛	20⅛	20⅛	—	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅛	20⅜
Oct.	19⅞	19½	19½	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞
Nov.	17⅞	17½	—	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½	17½
Dec.	—	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼
1930																																
January	—	15¾	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝
February	—	15¼	—	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼	15¼
March	15⅜	—	—	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜	15⅜
April	15⅞	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½	15½
May	14⅞	14⅞	14⅞	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾	14¾
June	13¾	13¾	13¾	13¾	13¾	13¾	—	12⅝	12⅝	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾	12¾
July	12¾	12¾	12	—	10½	10½	10¼	10¼	10¼	11⅜	11⅜	11⅜	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	10½	11¼	10
August	10⅝	—	—	10⅝	10½	10¼	10¼	10¼	10¼	11⅜	11⅜	11⅜	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝
September	—	9¾	9¾	9¾	9¾	9¾	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛
October	7½	7¾	8¼	8	—	8⅜	8⅜	8	—	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
November	8¾	8½	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾
December	9½	9½	9½	9½	9¼	9¼	—	9⅝	9⅝	9⅝	9½	9⅝	9⅝	—	9	9	8⅝	8⅝	8⅝	8⅝	—	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	9
1931																																
January	—	8¾	8⅜	—	8½	8⅜	8⅜	8⅜	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝
February	—	7¾	7⅞	7¾	7¾	7⅞	7¾	7⅞	7⅞	7⅞	—	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Month	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents	1929 Cents	1930 Cents	1931 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	40.25	20.14	15.24	8.34
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75	23.97	15.85	
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	26.82	24.55	15.34	
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	18.97	21.18	14.93	
May	15.25	27.39	18.89	58.47	47.75	40.76	18.99	21.46	14.24	
June	15.11	26.88	18.81	77.26	42.50	37.25	19.59	20.64	12.45	
July	14.67	26.10	22.16	103.16	41.03	34.87	19.40	21.30	11.24	
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	19.46	20.59	9.96	
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	18.47	20.37	8.28	
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	18.83	19.67	8.20	
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	18.26	16.62	9.01	
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	17.97	16.12	9.05	
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	22.48	20.55	11.98	

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	Nov.	Dec.	Jan.	Feb.	Day	Nov.	Dec.	Jan.	Feb.
1	4⅜	4⅝	—	—	17	4⅝	4¼	4⅛	3⅞
2	—	4⅝	—	3⅞	18	4⅝	4½	—	—
3	4⅛	4¾	4⅛	3⅞	19	4⅝	4⅝	4⅛	—
4	4⅛	4⅝	—	3⅞	20	4⅝	4⅝	4⅛	—
5	4½	4⅝	4¼	3¾	21	4⅝	—	4½	—
6	4⅛	4⅝	4¼	3⅞	22	4⅝	4⅝	4⅞	—
7	4¼	—	4¼	3⅞	23	—	4¼	4⅞	—
8	4⅛	4¾	4¼	—	24	4⅝	4⅝	4⅛	—
9	—	4¾	4¼	3⅞	25	4⅝	—	—	—
10	4¼	4¾	4¼	3⅞	26	4⅝	—	4⅛	—
11	4¾	4¾	—	3⅞	27	4½	—	4⅛	—
12	4⅜	4¾	4¼	3⅞	28	4½	—	4⅛	—
13	4⅜	4⅝	4¼	3⅞	29	4⅝	4¼	4	—
14	4½	—	4¼	3⅞	30	—	4⅛	4	—
15	4½	4½	4¼	—	31	—	4¼	3⅛	—
16	—	4⅝	4¼	3⅞					

Average Monthly Price Per Pound

Month	1929 Pence	1930 Pence	1931 Pence	Month	1929 Pence	1930 Pence	1931 Pence
Jan.	9.942	7.471	4.160	Aug.	10.505	4.880	
Feb.	11.875	7.948		Sept.	10.160	4.075	
Mar.	12.135	7.595		Oct.	9.620	4.023	
Apr.	10.490	7.391		Nov.	8.442	4.440	
May	10.717	6.926		Dec.	7.958	4.516	
June	10.580	6.195		Average for Year	10.291	5.926	
July	11.065	5.648					

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Jan.	Feb.	Day of Month	Jan.	Feb.	Day of Month	Jan.	Feb.
1	——	——	11	——	11.00	21	10.40	——
2	10.15	10.45	12	10.00	——	22	10.55	——
3	10.30	10.50	13	10.05	11.00	23	10.60	——
4	——	10.65	14	10.05	10.95	24	10.45	——
5	10.15	10.80	15	10.10	——	25	——	——
6	10.15	10.75	16	10.15	10.95	26	10.40	——
7	10.25	10.70	17	10.15	11.05	27	10.50	——
8	10.30	——	18	——	——	28	10.40	——
9	10.20	10.70	19	10.15	——	29	10.40	——
10	10.15	10.90	20	10.20	——	30	10.50	——
						31	10.45	——

Average Monthly Price Per Pound

	1929 Cents	1930 Cents	1931 Cents		1929 Cents	1930 Cents	1931 Cents
Jan.	20.22	17.21	10.27	Aug.	18.62	12.03	
Feb.	20.21	15.62		Sept.	18.83	10.85	
Mar.	20.19	15.13		Oct.	18.46	10.63	
Apr.	20.29	16.39		Nov.	17.53	10.96	
May	19.41	16.43		Dec.	17.28	10.02	
June	18.74	14.48		Average for Year	19.03	13.57	
July	18.62	13.10					

World Stocks of Crude Rubber

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND 1929	ON HAND 1930	ON HAND 1931	AFLOAT 1929	AFLOAT 1930	AFLOAT 1931	ON HAND AND AFLOAT 1929	ON HAND AND AFLOAT 1930	ON HAND AND AFLOAT 1931
Jan.	76,342	126,068	209,487	93,330	65,483	56,187	169,672	191,551	265,674
Feb.	90,058	134,790	.....	75,790	71,015	.....	165,848	205,805	.....
Mar.	100,536	141,843	.....	67,065	63,646	.....	167,601	205,489	.....
Apr.	107,659	148,272	.....	65,793	63,261	.....	173,457	211,533	.....
May	97,192	146,179	.....	65,793	68,168	.....	162,985	214,347	.....
June	92,061	151,485	.....	54,668	58,657	.....	146,729	210,142	.....
July	92,535	152,001	.....	46,145	58,326	.....	138,680	210,327	.....
Aug.	90,769	158,178	.....	49,423	61,168	.....	140,192	219,346	.....
Sept.	84,362	169,607	.....	58,758	60,923	.....	143,120	230,530	.....
Oct.	88,483	184,701	.....	59,180	51,122	.....	147,663	235,823	.....
Nov.	92,219	189,925	.....	62,358	52,538	.....	154,577	242,463	.....
Dec.	118,609	203,221	.....	62,388	56,035	.....	180,997	259,256	.....

(Rubber Manufacturers' Association figures raised to 100%)

STOCKS IN GREAT BRITAIN

Stocks in London

(No. of Tons in Wharves and Warehouses, including Latex)

At end of	1928	1929	1930	At end of	1928	1929	1930
Jan.	66,524	25,191	60,434	July	35,429	30,080	81,048
Feb.	62,964	25,554	64,557	Aug.	32,084	35,605	80,931
Mar.	58,272	28,214	68,923	Sept.	31,440	42,188	85,329
Apr.	53,425	31,368	74,676	Oct.	24,207	47,803	77,647
May	44,628	31,290	77,312	Nov.	17,775	52,454	76,887
June	38,756	31,025	80,260	Dec.	19,815	54,304	78,013

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1930					
October	81,544	82,245	83,102	82,218	
November	77,480	75,159	76,042	76,448	76,670
December	76,877	77,493	77,460	77,328	
1931					
January	78,042	78,761	79,261	80,194	81,039
February	81,183	81,432			

Stocks in Liverpool

1930					
October	36,378	37,244	37,211	38,345	
November	38,941	39,336	40,003	40,492	39,933
December	40,349	40,281	40,300	40,593	
1931					
January	41,516	41,814	42,270	42,171	43,463
February	43,293	43,679			

STOCKS IN PENANG AND SINGAPORE

(Stocks held by Dealers—Quantities in Long Tons)

End of	1928	1929	1930	End of	1928	1929	1930
Jan.	25,868	29,617	39,727	July	18,663	33,859	45,459
Feb.	22,867	32,373	44,371	Aug.	18,971	30,834	48,132
Mar.	20,538	29,437	45,657	Sept.	14,898	32,138	44,015
Apr.	16,946	26,474	48,473	Oct.	12,149	33,770	39,930
May	17,437	30,764	44,715	Nov.	29,188	30,963	41,674
June	18,207	30,403	42,451	Dec.	32,895	35,548	45,963

STOCKS IN OTHER CENTRES

1930 End of	Malaya Mainland	Afloat for Europe	Holland	Colombo	Para and Manaos
Jan.	44,740	28,440	2,134	5,400	3,668
Feb.	41,955	28,189	2,159	5,000	4,370
Mar.	39,206	27,510	2,220	4,759	4,578
Apr.	39,758	23,580	2,204	4,000	4,482
May	26,482	22,730	2,308	4,000	4,388
June	36,578	20,920	2,316	3,856	4,588
July	38,311	27,290	2,312	4,500	4,665
Aug.	39,482	30,310	2,196	5,200	4,489
Sept.	39,863	31,000	2,343	5,834	4,854
Oct.	38,587	27,630	2,378	5,600	5,156
Nov.	40,551	24,220	2,405	5,400	4,535
Dec.	40,919		2,569	5,189	5,132

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1927	19,700,003	79.1
1924	21,863,311	19.7	1928	24,247,282	81.6
1925	26,001,664	66.8	1929	24,141,502	80.8
1926	24,199,524	78.8	1930	17,364,096	80.1
1930			1930		
January	1,601,326	84.0	July	1,449,161	80.7
February	1,653,421	78.9	August	1,504,187	78.1
March	2,061,999	79.1	September	1,052,109	80.2
April	2,339,834	81.1	October	863,579	73.3
May	2,010,067	84.3	November	920,435	72.2
June	1,338,226	83.5	December	567,355	69.1

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928	1929
Production	40,932	45,259	51,633	60,845	61,237	64,439	77,944	68,726
Shipments	39,987	45,204	50,120	59,262	59,002	64,059	74,296	69,395
Inventory[2]	6,132	5,772	7,427	8,142	10,456	10,264	13,624	11,888

Figures for Recent Months

	PRODUCTION 1928	1929	1930	SHIPMENTS 1928	1929	1930	INVENTORY 1928	1929	1930
Jan.	5,358	6,301	4,485	5,394	6,211	4,406	9,949	12,855	11,924
Feb.	6,363	6,479	4,555	5,031	4,951	4,195	11,721	14,525	11,416
Mar.	6,819	7,049	4,863	5,731	6,289	4,717	12,389	15,329	12,513
Apr.	6,178	7,391	5,648	5,812	6,838	5,089	12,717	15,870	13,076
May	6,759	7,636	3,717	6,457	6,735	5,216	13,024	16,733	13,432
June	6,692	6,847	5,122	7,117	6,800	5,294	12,162	16,497	13,277
July	6,498	6,320	3,991	7,895	7,364	5,447	11,157	15,034	11,812
Aug.	7,469	5,693	4,166	8,403	7,354	5,175	10,084	13,337	10,848
Sept.	6,802	4,460	3,365	7,145	5,623	4,405	9,705	12,070	9,812
Oct.	7,326	4,611	3,582	5,717	4,649	3,499	11,520	12,042	9,803
Nov.	6,075	3,378	2,654	4,998	3,355	2,834	12,579	12,127	9,595
Dec.	5,605	3,057	2,814	4,591	3,237	3,361	13,624	11,888	9,003

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928	1929
Production	50,850	60,116	70,706	82,614	76,618	70,823	80,180	68,829
Shipments	49,673	59,072	68,016	81,004	71,591	72,896	77,127	70,592
Inventory[2]	7,642	8,425	11,052	11,313	16,200	13,692	16,117	12,807

Figures for Recent Months

	PRODUCTION 1928	1929	1930	SHIPMENTS 1928	1929	1930	INVENTORY 1928	1929	1930
Jan.	5,441	6,109	4,607	6,072	6,789	4,857	12,982	14,424	12,704
Feb.	6,895	6,346	4,634	5,431	4,948	4,337	14,650	15,936	13,036
Mar.	6,231	7,000	4,941	5,731	6,317	4,727	15,573	16,641	13,179
Apr.	6,661	7,157	5,510	5,702	6,716	4,848	16,638	17,000	13,784
May	7,168	7,181	5,535	6,300	6,598	5,074	17,702	17,745	13,852
June	6,953	6,542	4,950	7,136	6,515	5,265	17,159	17,294	13,612
July	6,674	5,793	3,939	8,729	7,605	5,855	14,974	15,311	11,657
Aug.	8,343	5,481	4,796	9,350	7,672	5,762	13,931	13,072	10,737
Sept.	7,103	5,190	3,817	7,154	5,859	4,541	13,543	12,585	10,065
Oct.	6,929	5,000	3,951	5,662	4,689	3,472	15,285	12,802	10,517
Nov.	5,592	3,544	2,680	5,002	3,480	2,788	15,743	12,845	10,313
Dec.	5,184	3,484	3,060	4,858	3,404	3,412	16,117	12,807	9,999

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete beginning with 1929, and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States Total	Passenger Cars	Trucks	Canada Total	Passenger Cars	Trucks	Grand Total
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,002	164,483	40,609	4,503,891
1927	3,393,887	2,938,868	453,019	179,426	146,850	32,556	3,573,313
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929							
Jan.	402,154	350,617	51,537	21,501	17,164	4,337	423,655
Feb.	466,084	407,589	58,495	31,287	25,584	5,703	497,371
March	584,733	513,266	69,559	40,621	32,833	7,788	625,354
April	620,656	538,679	81,977	41,901	34,392	7,509	662,557
May	603,969	516,055	86,596	31,559	25,129	6,430	635,528
June	545,252	453,956	91,296	21,492	16,511	4,981	566,744
July	500,331	427,213	73,118	17,461	13,600	3,861	517,792
Aug.	499,629	444,711	54,918	14,214	11,037	3,177	513,843
Sept.	415,332	365,651	49,681	13,817	10,710	3,107	429,149
Oct.	380,011	321,195	58,816	14,523	8,975	5,548	394,534
Nov.	217,570	170,928	46,642	9,424	7,137	2,287	226,994
Dec.	119,950	92,717	27,233	5,495	4,426	1,069	125,445
TOTAL	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930							
Jan.	273,089	235,099	37,990	10,388	8,856	1,532	283,477
Feb.	346,940	297,483	49,457	15,548	13,021	2,527	362,488
March	401,378	336,178	64,200	20,730	17,165	3,565	422,108
April	442,630	375,171	67,459	24,257	20,872	3,385	466,887
May	417,154	362,784	54,370	24,672	21,251	3,421	441,826
June	335,475	289,704	45,771	15,090	12,194	2,896	350,565
July	262,363	222,700	39,663	10,188	8,556	1,632	272,551
Aug.	223,046	187,288	35,758	9,792	6,946	2,846	232,838
Sept.	216,877	175,720	41,157	7,957	5,623	2,334	224,834
Oct.	150,044	112,800	37,244	4,541	3,206	1,335	154,585
Nov.	135,752	102,957	32,795	5,407	3,527	1,880	141,159
Dec.	155,601	124,070	31,531	5,622	4,225	1,397	161,223
Total	3,354,870	2,814,349	540,521	154,192	125,442	28,750	3,509,062

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[2]							
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[5]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley	All Other[6]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,528
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,580
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1928:															
Oct.	24,476	12,603	11,873	3,999	864	949	564	457	5,295	7,474	10,124	513	1,399	732	44,243
Nov.	68,135	10,436	57,699	8,005	1,048	772	564	425	4,950	7,902	7,805	943	1,790	623	92,526
Dec.	66,763	11,122	55,641	7,848	1,113	744	565	294	5,120	8,792	10,896	948	2,220	588	94,769
1929:															
Jan.	52,546	13,415	39,131	8,301	1,664	873	600	461	5,640	8,067	11,076	850	2,134	642	79,439
Feb.	47,926	12,103	35,823	7,064	1,117	955	600	495	6,572	7,511	10,384	807	2,104	520	73,952
Mar.	49,448	14,553	34,895	6,583	1,413	758	601	499	5,515	6,620	10,629	658	2,332	786	71,289
Apr.	49,816	11,414	38,402	5,097	727	747	548	306	5,997	6,645	11,321	673	1,950	569	72,982
May	43,960	15,593	28,367	5,723	800	966	548	453	6,264	6,961	13,437	1,059	1,922	733	67,233
June	40,398	14,344	26,054	5,563	1,122	1,061	547	422	5,582	6,698	11,270	757	1,398	548	61,017
July	46,454	15,071	31,383	5,457	974	1,247	641	462	6,422	7,192	13,995	575	1,457	543	70,348
Aug.	50,441	15,469	34,972	6,079	685	993	641	481	4,644	7,298	10,782	1,032	1,563	499	69,619
Sept.	53,484	12,392	41,092	7,993	384	832	640	406	4,708	7,517	10,149	655	1,566	504	76,446
Oct.	47,937	12,516	35,421	8,381	812	1,047	671	485	4,697	8,295	10,512	893	1,606	445	73,265
Nov.	46,279	11,204	35,075	6,660	1,065	668	672	278	4,760	6,711	9,380	771	1,442	535	68,017
Dec.	46,147	15,018	31,129	8,683	900	930	672	320	5,189	8,279	11,102	966	1,674	443	70,287
1930:															
Jan.	52,535	11,773	40,762	7,741	1,560	791	642	386	5,709	7,831	8,920	856	1,837	585	77,620
Feb.	48,947	12,960	35,987	7,825	1,245	847	642	469	6,900	7,191	11,414	944	1,797	480	75,741
Mar.	47,320	13,236	34,084	6,269	1,129	976	642	391	5,796	6,612	11,070	643	1,674	536	69,822
Apr.	45,517	16,331	29,186	5,030	856	1,026	502	366	4,802	6,326	12,582	433	1,201	630	62,940
May	49,388	36,135	13,253	5,947	975	917	502	350	6,352	6,661	11,916	753	1,383	555	49,564
June	36,657	12,120	24,537	4,152	778	1,040	201	392	4,728	4,776	9,512	425	974	551	52,066
July	41,347	12,759	28,588	4,619	792	1,087	600	327	6,022	5,891	9,770	648	810	418	59,572
Aug.	47,982	10,304	37,678	6,779	600	740	600	335	5,982	7,197	9,520	394	809	382	71,016
Sept.	48,529	8,087	40,442	7,920	343	680	600	289	5,960	6,358	7,302	527	1,093	400*	71,914
Oct.	47,770	7,312	40,458	7,388	591	598	650	300	5,916	6,956	6,352	667	669	400*	70,945
Nov.	41,420	7,566	33,854	5,835	264	631	600*	311	5,334	6,401	8,001	654	658	400*	63,543*
Dec.	42,086	9,671	32,415	6,934	800*	976	600*	335	6,254	7,196	8,476	721	1,365	400*	66,472*

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927, 1,437 in 1928, and 2,670 in 1929. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons 1926, about ½ ton in 1927, and 1 ton in 1928. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, 84 tons in 1927, 1,459 tons in 1928, and 1,302 tons in 1929. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States[1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	238,407	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,808
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	371,899
1921	179,736	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,620
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	—3,807	1,778	589	567	396,012
1923	301,527	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,173
1924	319,103	—11,550	30,446	22,727	14,299	19,571	9,764	2,346	3,124	2,688	—807	3,178	944	1,870	416,203
1925	385,596	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	632,808
1928	407,572	4,846	36,498	37,855	30,447	25,621	12,483	15,134	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	864	4,650	894,015
1928:															
Oct.	41,667	—934	3,728	4,386	2,943	3,711	1,049	98	766	696	141	527	250	318	59,346
Nov.	33,846	—3,141	3,278	3,694	2,799	2,150	1,340	689	837	544	31	337	252	282	46,938
Dec.	40,781	8,438	3,633	2,470	2,618	3,002	1,145	1,378	755	639	148	435	263	204	65,905
1929:															
Jan.	53,922	11,951	5,645	4,711	3,759	3,776	1,481	956	1,061	749	218	638	179	525	89,571
Feb.	61,331	5,179	5,001	4,613	2,908	2,727	1,259	684	1,131	627	113	226	115	356	86,270
Mar.	46,391	9,068	4,409	4,586	4,961	2,630	1,515	716	725	931	316	354	80	409	77,091
Apr.	52,520	8,295	4,854	5,351	3,177	2,308	1,407	703	1,518	750	144	956	40	445	82,478
May	48,475	5,112	3,152	3,682	2,987	2,314	1,417	996	1,437	854	201	468	37	277	71,359
June	38,821	4,787	6,814	3,948	3,075	1,593	1,624	695	2,215	672	687	507	24	520	65,882
July	41,114	4,993	4,839	3,559	3,205	2,388	2,023	1,056	2,918	1,039	253	519	30	455	68,401
Aug.	35,397	14,594	4,645	4,082	2,879	3,663	908	1,234	724	902	254	429	25	319	70,055
Sept.	32,912	17,010	3,889	4,691	1,908	3,511	1,224	1,235	853	672	258	361	91	477	68,453
Oct.	36,040	16,111	4,489	3,355	1,821	3,902	1,838	1,073	1,125	1,147	278	710	91	201	72,181
Nov.	41,097	13,141	3,082	3,776	2,709	3,221	1,276	1,226	1,453	361	253	595	62	313	72,564
Dec.	40,588	12,434	4,274	2,921	2,114	2,251	1,198	1,200	726	741	52	677	90	443	69,709
1930:															
Jan.	44,911	11,106	4,207	3,862	2,842	2,805	910	826	332	612	209	552	200*	577	78,949
Feb.	40,792	10,293	4,482	3,697	2,250	1,386	1,385	2,705	457	1,143	188	315	200*	239	69,533
Mar.	42,216	12,346	4,354	4,289	3,776	2,663	1,083	1,153	975	678	358	322	200*	263	74,676
Apr.	43,036	13,058	5,006	4,488	2,303	2,769	2,067	929	673	1,431	158	461	200*	255	76,790
May	40,012	9,861	5,233	4,379	2,593	2,699	1,279	1,645	64	1,250	230	274	200*	282	65,620
June	37,374	9,645	4,458	3,794	2,579	2,677	1,378	1,574	67	691	343	507	200*	282	65,620
July	32,785	7,650	3,811	3,449	3,347	1,206	587	567	84	939	172	756	200*	342	55,395
Aug.	34,513	8,369	3,953	3,515	2,108	2,170	886	149	265	888	37	747	200*	450	58,250
Sept.	34,373	16,015	5,285	4,089	1,578	2,606	1,279	1,373	414	824	221	817	200*	411	69,485
Oct.	44,385	9,095	6,728	3,747	1,942	3,951	2,460	2,782	609	709	439	1,132	200*	351	78,590
Nov.	28,437	250		3,074	2,128		2,510				364	1,180	200*		
Dec.	35,202	12,249													

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1]United States imports of guayule are included in this compilation. *Figure is provisional; final figure will be shown immediately it becomes available.

Domestic Production of Miscellaneous Rubber Goods

	Rubber Proofed Fabrics	Rubber Heels	Rubber Soles	Mechanical Goods Shipments
	Yards	Pairs	Pairs	Dollars
1924	25,020,000	186,279,000	(1)	$48,615,000
1925	23,988,000	206,970,000	16,211,620 (2)	64,877,000
1926	29,328,000	183,312,000	12,253,000	76,789,000
1927	37,872,000	201,014,000	27,160,000	68,625,000
1928	41,179,000	235,170,000	37,645,000	69,114,000
1929	50,731,000	232,126,000	34,499,000	74,770,000
1929:				
December	2,291,000	14,781,000	3,003,000	4,751,000
1930:				
January	3,281,000	15,470,000	3,496,000	5,169,000
February	3,441,000	14,172,000	2,338,000	5,376,000
March	3,570,000	15,439,000	2,582,000	5,981,000
April	4,029,000	17,762,000	2,593,000	5,989,000
May	3,597,000	15,603,000	1,939,000	6,163,000
June	3,279,000	15,795,000	2,784,000	5,318,000
July	2,940,000	15,117,000	2,663,000	4,910,000
August	3,458,000	13,735,000	1,473,000	4,552,000
September	5,046,000	14,322,000	2,193,000	4,083,000
October	5,209,000	16,460,000	3,056,000	4,186,000
November	2,822,000	11,083,000	1,426,000	3,400,000

(1) Not available; (2) Last 9 months only.

Source: "Survey of Current of Business of the Department of Commerce."

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Liquid Latex (1)	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	760,690	727	937,038	3,332	2,213,964	—	—
1920	758	345,985	1,064	1,260,042	5,672	2,068,501	—	—
1921	58	26,945	814	1,077,859	1,745	351,893	—	—
1922	127	57,040	812	978,765	2,335	403,812	—	—
1923	1,155	542,227	700	898,524	4,565	853,308	—	—
1924	1,356	536,392	464	568,456	6,165	1,237,100	2,157	864,059
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	3,853	2,537,810
1926	4,305	2,562,096	354	327,218	7,263	3,127,757	3,388	4,680,386
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,116	876,077
1928	3,075	1,755,685	731	430,855	7,552	2,540,059	4,167	2,185,579
1929	1,231	545,175	728	566,964	8,203	2,458,136	3,728	1,787,997
1930	1,096	347,388	501	422,684	5,907	1,403,244	4,449	1,506,804
1930:								
Jan.	150	55,272	23	23,549	509	141,384	407	194,703
Feb.	75	25,956	52	45,319	367	98,087	311	153,843
Mar.	148	50,007	16	12,496	522	128,844	279	107,847
Apr.	75	19,856	58	54,543	410	103,089	226	98,239
May	172	57,760	17	13,645	602	144,415	749	242,385
June	168	51,561	52	47,000	532	120,424	389	129,368
July	93	26,000	24	17,463	45	102,325	242	78,688
Aug.	50	14,000	11	5,600	766	168,511	944	253,127
Sept.	100	28,000	45	39,512	486	86,664	402	127,751
Oct.	64	18,527	36	30,702	490	113,638	306	99,637
Nov.	—	—	73	61,650	389	84,219	332	65,265
Dec.	—	—	90	66,198	429	116,644	70	20,481

(1) Latex import figures not available before 1924.

Reclaimed Rubber in the United States

(All Quantities in Long Tons)

	Consumption					Consumption			
Year	Production	Tons	% to Crude	Stocks*	Year	Production	Tons	% to Crude	Stocks*
1920	86,395	75,297	38.4	.....	1925	132,930	137,105	35.6	13,203
1921	36,725	41,351	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	57,334	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7	.....	1928	208,516	223,000	50.4	24,785
1924	80,079	76,072	22.4	.....	1929	218,954	226,588	48.4	27,464
1928:									
Jan.	14,862	20,140	58.5	21,941	July	17,278	19,070	51.0	17,305
Feb.	15,291	18,670	55.4	20,848	Aug.	19,049	17,890	41.7	15,881
Mar.	17,069	20,680	57.9	19,558	Sept.	18,693	17,795	44.6	17,991
Apr.	15,393	19,280	58.8	19,283	Oct.	17,182	18,420	45.1	17,026
May	18,945	20,215	54.1	18,137	Nov.	18,245	18,380	49.1	22,399
June	18,781	18,140	49.2	18,709	Dec.	17,728	14,220	45.9	24,785
1929:									
Jan.	18,685	21,068	49.1	24,394	July	18,387	20,236	48.7	19,679
Feb.	18,094	19,829	47.7	23,305	Aug.	19,787	18,230	47.6	22,309
Mar.	19,984	20,367	46.7	22,076	Sept.	18,660	17,071	49.2	24,984
Apr.	19,899	22,485	47.8	20,680	Oct.	18,865	18,744	53.8	25,117
May	20,385	23,176	47.1	19,479	Nov.	14,363	15,330	55.4	26,080
June	18,416	18,141	42.0	17,980	Dec.	13,429	11,531	49.0	27,464
1930:									
Jan.	15,010	17,454	47.6	24,241	July	12,322	12,394	42.3	23,873
Feb.	15,846	14,559	44.5	24,243	Aug.	12,047	10,985	35.9	22,930
Mar.	17,400	15,241	42.2	24,415	Sept.	11,433	10,480	41.4	21,996
Apr.	17,828	16,904	42.0	24,587	Oct.	12,349	10,724	39.3	21,145
May	17,812	17,052	42.7	23,356	Nov.	10,763	8,816	37.5	24,007
June	15,714	14,063	40.8	24,449	Dec.	.....	.....	.....	.....

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927, 9,577 tons in 1928, and 12,869 tons in 1929.

(Rubber Manufacturers' Association figures raised to 100%)

REVIEW DESK

Books, New Publications, Catalogues, Etc.

RUBBER: NEWER THEORETICAL AND PRACTICAL DEVELOPMENTS. By Harry L. Fisher, United States Rubber Company, Passaic, N. J. 1931. 24 pp.

The yield of plantation rubber is being increased from 350 to 1,000 pounds per acre by means of bud-grafting. Latex can be vulcanized. The importance has been shown of some of the non-rubber constituents in the manufacture of rubber goods. The highly purified rubber hydrocarbon has been separated into rather indistinct components, and has been crystallized and even distilled. X-ray studies show a definite alignment of fibers when rubber is stretched, and the fibrous nature of stretched rubber has been proved experimentally at low temperatures. These are some of the topics discussed by Dr. Fisher, together with the chemical structure of natural and synthetic rubber and of the newer chemical derivatives, in this reprint from the *Journal of Chemical Education* of his talk last October before the Rhode Island Section of the American Chemical Society. Vulcanization, aging, and the newer applications of rubber in lining chemical apparatus, for preventing ice formation on airplanes, in upholstery, rugs, automobile engine mountings, etc., are summarized.

THE COMMERCIAL STANDARDS SERVICE AND ITS VALUE TO BUSINESS. Published by the Bureau of Standards, United States Department of Commerce, Washington, D. C. 1930. 40 pp. $0.10.

Recent application of quality standards to familiar articles of commerce has greatly stimulated interest in the establishment of standards. The background and origin of commercial standards are discussed in this pamphlet, together with the necessity, scope, purpose and application of such practices. The commercial standards procedure and service are described, examples of commercial standards are given, the benefits and savings derived are cited, and suggestive questions are answered.

NUVEYOR ASH CONVEYOR SYSTEM. Published by the United Conveyor Corporation, Old Colony Building, Chicago, Ill. 1931. 24 pp. For free distribution.

There are so many advantages in using a pipe line system for conveying ash that it is generally recognized by engineers as the basis for an ideal system if certain disadvantages of existing methods could be overcome. A special system devised by the company issuing this booklet is described with copious illustrations and full details of operation.

ENGINEERING ACHIEVEMENTS, 1930. Published by the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. 1931. 40 pp. For free distribution.

Apparently the industrial depression of 1930 did not halt the advance of science, nor the march of those great tendencies which make electrical progress so full of interest. Machinery, running at higher velocities; the progressive use of water power; equipment venturing into new media in the place of air; development in transportation by land, water and air; and a variety of services rendered to industry are all noteworthy. Especially interesting are the diversity of vacuum and other kindred tubes; curiosities of the research laboratory yesterday, commonplace tools of industry tomorrow—evidence of the speed with which the discoveries of science are adopted by the progressive engineer. These and other equally interesting topics are covered in this well illustrated review of the past year from the point of view of one of the country's leading suppliers of electrical equipment.

TRAINING PLANS FOR OFFICE EMPLOYEES. Published by the Policyholders Service Bureau, Metropolitan Life Insurance Company, 1 Madison Avenue, New York City. 1931. 20 pp. For free distribution.

The training of office employes has begun to receive the stimulus which comes from the application of executive genius to human engineering in offices. This publication brings together several successful plans for training office workers, which have resulted in greater output per employe, reduction of errors and other economies.